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TABLES FOR ESTIMATING TOTAL-TREE WEIGHTS, STEM WEIGHTS, AND VOLUMES OF PLANTED AND NATURAL SOUTHERN PINES IN THE SOUTHEAST

By
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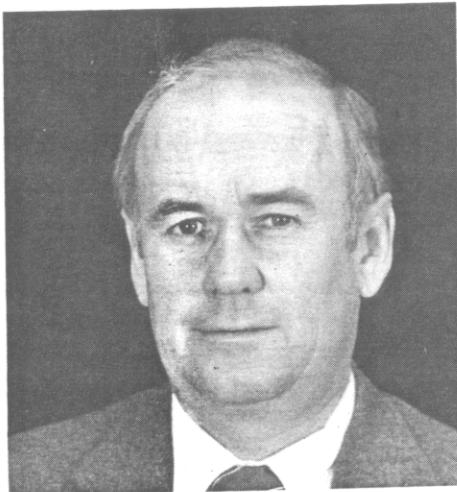


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TABLES FOR ESTIMATING TOTAL-TREE WEIGHTS, STEM WEIGHTS, AND VOLUMES OF PLANTED AND NATURAL SOUTHERN PINES IN THE SOUTHEAST

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INTRODUCTION

An increasing amount of southern pine timber is now coming from young, fast-growing plantations rather than older, natural stands. USDA Forest Service projections indicate that by the year 2000, half of the southern pine timber harvested will be from plantations. Total-tree and tree-component weight and volume equations and tables are needed for plantation-grown trees. Tables are available for estimating plantation-pine stem weight and volume but not for estimating weight and volume of the total tree (Bailey and others 1982, 1985). Total-tree and tree-component equa-

tions are available for the major southern pines growing in natural stands (Saucier and others 1981). However, these tables are not applicable to trees cruised by saw-log merchantable height or height to a 4-inch d.o.b. top.

This paper provides: (1) Equations and tables for estimating total-tree weights, stem weights, and volumes of plantation-grown loblolly (*Pinus taeda* L.) and slash (*P. elliottii* Engelm.) pines when d.b.h. and total height or height to a 4-inch d.o.b. top are known; (2) Tables of total-tree

weights, stem weights, and volumes for southern pines growing in natural stands when d.b.h. and total height, height to 4-inch top, or saw-log merchantable height are known. Combined tables are presented for loblolly and shortleaf pines (*P. echinata* Mill.) growing in natural stands in the Piedmont and for loblolly, slash, and longleaf pines (*P. palustris* Mill.) growing in natural stands in the Coastal Plain. Tables are also presented for planted loblolly pines in the Piedmont and planted slash pines in the Coastal Plain.

METHODS

Equations and tables were developed from data collected in several studies. These studies were conducted by the Southeastern Forest Experiment Station in cooperation with the Georgia Forestry Commission, University of Georgia School of Forest Resources, forest industries, and Southern Region of USDA Forest Service.

In all studies except one, a stratified random sample of trees was selected to obtain equal numbers of trees in all diameter classes. In the loblolly pine plantation study conducted in cooperation with the University of Georgia School of Forest Resources, trees were sampled from crown-class strata. Three sample trees were felled in each of 135 study plantations. Two trees were from the dominant or codominant crown class, while the third tree was alternately selected from the intermediate or suppressed crown class. Only trees sampled from stands 15 years or older were included in the analysis. The locations where planted and naturally seeded trees were sampled are shown in Figure 1. Appendix Table 69 shows means and ranges in tree measurements in each diameter class. Ages of plantation loblolly pines ranged from 15 to 35 years and averaged 22 years on the Piedmont. Ages of plantation-grown slash pines on the Coastal Plain ranged from 10 to 31 years and averaged 21 years.

Field Data Collection

Each sample tree was felled, and diameters outside bark (d.o.b.) were measured at the butt, at 2 feet, and at 4.5 feet, and at 4 foot-intervals up the bole in natural stands and at 5-foot intervals in planted stands. In natural stands, heights to the saw-log or 7-inch top and to 4-, and 2-inch tops were recorded. In planted stands, heights to 6-, 4-, and 2-inch tops were recorded. Cross-sectional disks were removed from the stem and branches of study trees for laboratory determination of specific gravity, moisture content, and percentage of bark. Foliage weight was estimated from randomly selected sample branches in each study tree.

The branches of all trees were cut from the stem and weighed. In natural stands, the stems of pulpwood-size

trees (trees 5.0 to 8.9 inches d.b.h.) were weighed to a 4- and 2-inch d.o.b. top. The stems of sawtimber-size trees (trees \geq 9.0 inches d.b.h. with a minimum of one 16-foot grade 3 log) were weighed to a 7-inch d.o.b. or merchantable saw-log top and to 4-, and 2-inch d.o.b. tops. Stems of saplings (trees 1.0 to 4.9 inches d.b.h.) were weighed in one piece to the tip. Stems of plantation trees sampled by the Forest Service in cooperation with the Georgia Forestry Commission and forest industries were weighed to 6-, 4-, and 2-inch tops in the field. Stem weights of planted trees sampled in cooperation with the University of Georgia were estimated from stem measurements and physical properties of cross-sectional disks.

Laboratory Data Collection

Disks collected from each tree were processed in the laboratory to determine the percentage of bark on a weight basis and the moisture content and specific gravity of wood and bark, separately. These determinations provided the data necessary for computing green and dry weights per cubic foot of stem wood, branchwood, and bark.

Equations for predicting diameters inside bark (d.i.b.) were developed from d.o.b. and d.i.b. stem-disk measurements and the d.o.b. and height measurements taken at 4- or 5-foot intervals up the stem of each tree. Volumes of wood in stems to saw-log and 6-, 4-, and 2-inch d.o.b. tops and to tips were calculated by Smalian's formula. For planted loblolly trees sampled in cooperation with the University of Georgia, green weight per cubic foot of each 5-foot bolt was estimated from moisture contents and specific gravities of the disks at the ends of each bolt. In these computations, disk values were weighted by disk cross-sectional area. Bolt wood green weight was then calculated from estimated bolt weight per cubic foot and bolt wood volume. Bolt weight of wood plus bark was then estimated from the weighted percentage of bark in end disks. Green weight per cubic foot of branchwood was calculated from weighted values for branchwood specific gravity and moisture content. Cubic-foot volume of branchwood was computed by dividing branch green weight by its green weight per cubic foot. Volume of wood in whole trees was computed by

adding the volume of wood in branches to the volume of wood in the stem.

Data Analysis

Regression equations were developed to predict green weight of wood, bark, and needles and volume of wood only in the total tree above a 0.5-foot stump, in the stem from butt to tip, and in the saw-log stem to a variable top. Independent variables were: diameter breast height (D), total height (Th), height to a 4-inch d.o.b. top (H₄), and saw-log merchantable height (M_h).

A logarithmic transformation (base 10) was used to obtain a relatively homogeneous variance, which is assumed in regression analysis. Thus, regression equations for estimating weight and volume were calculated with the models:

$$\log Y = a + b \log X + \epsilon \quad (1)$$

$$\log Y = a + b \log X_1 + c \log X_2 + \epsilon \quad (2)$$

where: Y = predicted component weight or volume

$$X = D^2, D^2 Th, D^2 H_4, \text{ or } D^2 M_h$$

$$X_1 = D^2$$

$$X_2 = Th, H_4, \text{ or } M_h$$

ϵ = experimental error

a,b,c = regression coefficients

Equation (1) fit the planted data best and was selected for use with d.b.h. and total height and d.b.h. and height to a 4-inch d.o.b. top to predict the weight and volume of plantation-grown trees. Plots of residuals showed that equations (1) and (2) underestimated total-tree and total-stem weight and volume of natural pines \geq 14 inches when one equation was used for all trees 1 inch and larger (Clark and others 1985). When equation (2) was used with $D^2 + M_h$ for sawtimber trees \geq 9 inches the residuals indicated good predictability. Equation (2) was therefore selected for use with d.b.h. and saw-log merchantable height. Two equations were developed for d.b.h. and total height and d.b.h. and height to a 4-inch top for natural pines. For the total height variable, one equation (3) for trees $<$ 5 inches, and another (4) for trees \geq 5 inches d.b.h. were developed. For the height to a 4-inch-top variable, one

equation (3) for trees < 9 inches, and another (4) for trees \geq 9 inches d.b.h. were developed.

The procedure outlined in Draper and Smith (1981) for fitting two linear equations with known point of intersection was used to develop the following equations:

$$\log Y_p = a + b \log X + e \quad (3)$$

$$\log Y_s = a + b \log (i^2 H) + c \log (D^2 / i^2) + e \quad (4)$$

where: Y_p = predicted component weight or volume for trees < 9 inches d.b.h.

Y_s = predicted component weight or volume for trees \geq 9 inches d.b.h.

$$X = D^2, D^2 Th, \text{ or } D^2 H_4$$

$$i = 5 \text{ when } X = D^2 Th \text{ or } 9 \\ \text{when } X = D^2 H_4$$

$$H = Th \text{ or } H_4$$

$$D = \text{d.b.h.}$$

ϵ = experimental error

a,b,c = regression coefficients

When logarithmic estimates are converted back to original units, they are biased downward because the antilogarithm of an estimated mean is the geometric rather than the arithmetic mean (Cunia 1964). To adjust for this bias, a correction factor was computed and applied to each model using Baskerville's (1972) procedure. The final equations including correction factors were simplified to:

$$Y = a(D^2)^b (Mh)^c \quad (5)$$

$$Y_p = a(D^2 H)^b \quad (6)$$

$$Y_s = a(D^2)^b (H)^c \quad (7)$$

An exponential ratio equation was used to estimate the proportion of predicted total-stem weight or volume to a specified top d.o.b. for both natural and planted trees:

$$Y_R = e^{a(d^b D^c)} \quad (8)$$

where: Y_R = predicted ratio of stem weight or volume to top d.o.b./total-stem weight or volume

d = specified stem-top diameter in inches

D = tree diameter at breast height in inches

a,b,c = regression coefficients

e = base of natural log = 2.71828

The exponential ratio model shown below was developed to estimate a ratio for expanding saw-log stem weight or volume of naturally grown trees to any d.o.b. top above the saw-log top.

$$Y_R = e^{(a(Mh))^b [(1.0 - d^2 / 0.6084 D^2)^2]^c} \quad (9)$$

where: Y_R = predicted ratio of stem weight or volume to top d.o.b./saw-log stem weight or volume

Mh = saw-log merchantable height in feet

d = specified top diameter in inches

D = tree diameter at breast height in inches

0.6084 = constant based on average form class--(0.78)²

a,b,c = regression coefficients

e = base of natural log

RESULTS

Weight and Volume Tables

Equations for weight and volume were developed for planted pines using d.b.h. in combination with total height and height to 4-inch d.o.b. top and for natural pines using d.b.h. in combination with total height, height to 4-inch d.o.b. top, and saw-log merchantable height. Equations were developed to predict the weight of wood, bark, and needles in the total tree and the weight of wood and bark in the stem from butt to tip and butt to saw-log merchantable top. Equations were also developed to predict the volume of wood in cubic feet in the total tree, total stem, and saw-log stem. Equations were developed for estimating total-tree and total-stem weight and volume using d.b.h. in combination with total height or height to a 4-inch d.o.b. top--using equation (6) for plantation trees and equations (5 and 6) for natural stand trees. Ratio equation (8) was used to estimate the proportions of total stems in the sections from the stump to a 7-inch and a 4-inch d.o.b. top for natural stand pine and to a 6-, 4-, and 2-inch d.o.b. top for planted pine. Equation (5) was used to predict

the weight and volume of the total tree and saw-log stem to a 7-inch d.o.b. top or to the point where a grade 3 saw-log stopped in natural pine trees \geq 9 inches d.b.h. Ratio equation (9) was used to expand the saw-log stem to a 4-inch d.o.b. top.

These equations were used to develop tables showing predicted weight and volume of the total tree, the stem to 4-inch d.o.b. top, and the stem to a 7-inch or saw-log-merchantable top for natural loblolly, slash, and longleaf pines growing in the Coastal Plain and natural loblolly and shortleaf pines growing in the Piedmont. These equations were also used to develop tables showing predicted weight and volume of the total tree and stem to a 6-, 4-, and 2-inch d.o.b. top for planted slash pine in the Coastal Plain and planted loblolly in the Piedmont. The tables based on d.b.h. and total height or height to a 4-inch top show weight and volume by 1-inch d.b.h. classes and 10-foot height intervals. The tables based on d.b.h. and saw-log merchantable height show weight and volume by 1-inch d.b.h. classes and $\frac{1}{2}$ -log intervals.

The various weight and volume tables are presented in series for natural and planted trees by species groups and by the d.b.h. and height combinations.

The volume of pulpwood in sawtimber-size trees can be estimated by subtracting predicted stem weight or volume to the merchantable saw-log top or 7-inch top from the predicted stem weight or volume to the 4-inch top. Likewise, crown weight or volume can be estimated by subtracting predicted stem values to the 4-inch top from predicted total-tree weight or volume.

All tables for naturally grown trees are good predictors of tree weight and volume, but tables based on d.b.h. and total height or d.b.h. and height to 4-inch d.o.b. top are the best indicators of stem weight or volume to the 4-inch top. Tables based on d.b.h. and saw-log merchantable height are the best estimators of the saw-log merchantable stem because tables based on total height and height to a 4-inch top estimate the stem to a fixed 7-inch top rather than to where a grade 3 log stopped.

Trees of similar diameter and height in natural stands may vary in weight and volume because of differences in crown size and stem taper related to stand stocking. Therefore, tables presented here for naturally grown pines should be applied to trees growing in fully stocked stands.

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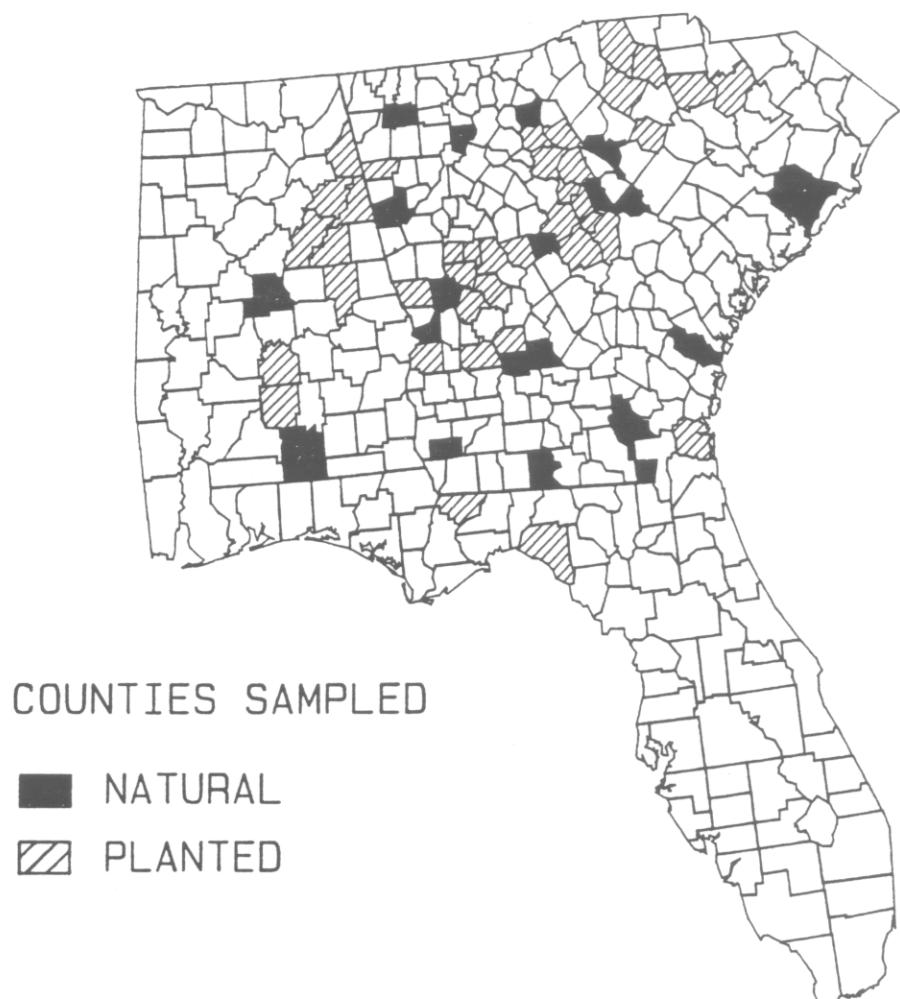


Figure 1.--Map of Alabama, Georgia, South Carolina and northern Florida showing counties in which natural pine stands and planted stands were sampled for development of regional species equations.

Table 1.--Predicted green weight of total tree (wood, bark, and foliage) for southern pine in the Coastal Plain, based on d.b.h. and total height $\frac{1}{2}$ /

D.b.h. class (inches)	Total-tree height (feet)									
	20	30	40	50	60	70	80	90	100	110
Pounds 3/										
1	5	7	9	11						
2	18	26	33	41						
3	37	54	70	85	101					
4	63	91	118	144	171					
5	136	177	217	256	295					
6	201	261	320	378	435					
7	279	362	444	525	604	682				
8	370	481	590	697	802	906				
9	476	618	758	896	1031	1165	1297			
10	595	774	949	1121	1290	1457	1623			
11	948	1162	1373	1580	1785	1988	2189			
12	1141	1399	1652	1902	2148	2392	2634			
13	1353	1658	1959	2255	2547	2837	3123	3407		
14	1584	1942	2294	2640	2983	3321	3657	3990		
15	1834	2249	2656	3058	3455	3847	4235	4621		
16	2104	2580	3047	3508	3963	4413	4859	5301		
17	2935	3467	3991	4509	5021	5528	6031			
18	3315	3916	4508	5092	5671	6243	6811			
19	3719	4393	5057	5713	6362	7005	7642			
20	4148	4900	5641	6372	7096	7813	8523			
21	4602	5436	6258	7070	7873	8668	9456			
22	5081	6002	6909	7806	8692	9570	10440			
23	5586	6598	7595	8580	9555	10520	11476			
24	6115	7223	8315	9394	10460	11517	12564			

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees < 5.0 inches d.b.h. $Y = 0.32214 (D^2 H)^{0.91330}$
 Trees ≥ 5.0 inches d.b.h. $Y = 0.19821 (D^2)^{1.06419} (H)^{0.91330}$

Table 3.--Predicted green weight of stem wood and bark to 7-inch d.o.b. top for southern pine in the Coastal Plain, based on d.b.h. and total height $\frac{1}{2}$ /

D.b.h. class (inches)	Total-tree height (feet)									
	30	40	50	60	70	80	90	100	110	
Pounds 3/										
9	227	299	370	441	511	581	650			
10	346	456	564	672	779	886	992			
11		620	769	915	1061	1206	1351	1494		
12	792	981	1168	1355	1540	1724	1907			
13	971	1202	1432	1660	1887	2113	2338	2562		
14	1158	1434	1708	1980	2251	2520	2788	3055		
15	1354	1678	1998	2317	2633	2948	3262	3574		
16	1561	1934	2303	2670	3035	3398	3760	4120		
17		2203	2624	3043	3459	3872	4284	4694		
18	2487	2962	3434	3904	4371	4836	5299			
19		2785	3318	3846	4372	4895	5415	5934		
20	3098	3690	4279	4863	5445	6024	6601			
21		3427	4081	4732	5378	6022	6662	7300		
22	3770	4491	5206	5918	6625	7330	8032			
23		4129	4918	5702	6481	7256	8028	8796		
24	4503	5364	6219	7069	7914	8756	9594			

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees ≥ 9 inches d.b.h. $Y = 0.17567 (D^2)^{1.00751} (H)^{0.95925}$
 $Y_R = e^{(-2.45015 (d)^4 - 6.46713 (D)^{-4.81445})}$

Table 2.--Predicted green weight of stem wood and bark to 4-inch d.o.b. top for southern pine in the Coastal Plain, based on d.b.h. and total height $\frac{1}{2}$ /

D.b.h. class (inches)	Total-tree height (feet)									
	30	40	50	60	70	80	90	100	110	
Pounds 3/										
5	61	80	99	118	136					
6	129	170	210	250	290					
7	203	268	331	395	458	520				
8	283	373	462	550	637	724				
9	369	487	603	718	833	946	1060			
10	464	611	757	902	1046	1189	1331			
11	747	926	1102	1278	1453	1627	1799			
12	895	1109	1320	1531	1740	1948	2155			
13	1055	1307	1556	1804	2051	2296	2540	2784		
14	1227	1520	1811	2099	2386	2671	2956	3239		
15	1412	1749	2083	2415	2746	3074	3401	3726		
16	1610	1994	2375	2753	3130	3504	3877	4248		
17	2254	2685	3113	3538	3962	4383	4803			
18	2531	3014	3495	3972	4447	4920	5391			
19	2823	3362	3898	4431	4961	5488	6014			
20	3131	3729	4324	4914	5502	6087	6670			
21	3455	4115	4771	5423	6072	6717	7361			
22	3795	4520	5241	5957	6669	7379	8085			
23	4151	4944	5732	6516	7295	8071	8843			
24	4523	5388	6246	7100	7949	8794	9636			

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees ≥ 5.0 inches d.b.h. $Y = 0.17567 (D^2)^{1.00751} (H)^{0.95925}$
 $Y_R = e^{(-2.45015 (d)^4 - 6.46713 (D)^{-4.81445})}$

$$Y_R = e^{(-2.45015 (d)^4 - 6.46713 (D)^{-4.81445})}$$

Table 4.--Predicted green weight of total tree (wood, bark, and foliage) for southern pine in the Coastal Plain, based on d.b.h. and height to the 4-inch d.o.b. top $\frac{1}{2}$ /

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)									
	10	20	30	40	50	60	70	80	90	100
Pounds 3/										
5	135	221	295	361						
6	175	286	382	468	548					
7		356	475	583	683	777				
8	431	574	704	825	939					
9	509	679	832	975	1110	1238	1362			
10	632	842	1033	1210	1378	1537	1690			
11		1024	1256	1472	1675	1869	2055			
12	1224	1501	1759	2002	2234	2456	2670			
13	1442	1769	2073	2359	2632	2894	3146	3390		
14	1679	2060	2413	2746	3064	3369	3662	3947		
15	1934	2372	2780	3164	3530	3880	4219	4547		
16	2208	2708	3173	3611	4029	4429	4816	5190		
17	3067	3593	4089	4562	5016	5453	5877			
18	3448	4040	4598	5129	5639	6131	6607			
19		3852	4513	5137	5731	6300	6850	7382		
20	4279	5014	5706	6366	6999	7610	8201			
21	4729	5541	6307	7036	7736	8410	9063			
22	5203	6096	6938	7740	8510	9252	9970			
23	5699	6677	7600	8479	9322	10135	10922			
24	6219	7286	8293	9252	10172	11059	11918			

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees < 9 inches d.b.h. $Y = 2.68127 (D^2 H_4)^{0.70986}$

Trees ≥ 9 inches d.b.h. $Y = 0.67084 (D^2)^{1.02515} (H_4)^{0.70986}$

Table 5.--Predicted green weight of stem wood and bark to 4-inch d.o.b. top for southern pine in the Coastal Plain, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)									
	10	20	30	40	50	60	70	80	90	100
----- Pounds 3/ -----										
5	54	90	122	151						
6	104	174	236	293						
7	254	344	426	503	577					
8	330	446	553	654	749					
9	405	548	680	803	921	1033	1141			
10	502	680	843	996	1141	1281	1415			
11	821	1018	1203	1379	1547	1709	1866			
12	973	1207	1425	1634	1833	2025	2212			
13	1136	1408	1664	1907	2139	2364	2581	2793		
14	1309	1623	1918	2198	2466	2725	2976	3219		
15	1494	1852	2188	2508	2814	3109	3395	3673		
16	1689	2094	2474	2836	3182	3516	3839	4154		
17	2350	2777	3182	3571	3945	4308	4661			
18	2620	3095	3547	3980	4398	4803	5196			
19	2903	3430	3930	4410	4873	5321	5757			
20	3200	3780	4332	4861	5371	5865	6345			
21		4146	4752	5332	5891	6433	6960			
22		4528	5189	5823	6434	7026	7601			
23		4926	5645	6334	6999	7643	8269			
24		5339	6119	6866	7586	8284	8963			

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees < 9 inches d.b.h. $Y = 1.68293 (D^2 H_4)^{0.74729}$

Trees ≥ 9 inches d.b.h. $Y = 0.70338 (D^2)^{0.94581} (H_4)^{0.74729}$

$$Y_R = e^{(-2.45015 (d)^{4.64713} (D)^{-4.81445})}$$

Table 7.--Predicted green weight of total tree (wood, bark, and foliage) for southern pine in the Coastal Plain, based on d.b.h. and saw-log merchantable height 1/ 2/

D.b.h. class (inches)	Merchantable saw-log top (16-ft logs)								
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
----- Pounds 3/ -----									
9	727	883	1015	1131	1236				
10	889	1080	1241	1383	1512				
11	1296	1490	1660	1814	1956	2087			
12	1531	1760	1961	2143	2310	2465			
13	1785	2051	2285	2497	2692	2873	3044		
14	2057	2363	2634	2878	3102	3311	3507		
15	2347	2697	3005	3284	3540	3778	4002	4214	
16	2655	3051	3400	3716	4005	4275	4528	4767	
17	2982	3427	3819	4173	4498	4801	5085	5354	
18	3327	3823	4260	4655	5018	5356	5673	5973	
19		4239	4724	5162	5565	5940	6291	6624	
20		4677	5211	5695	6139	6552	6940	7307	
21		5134	5721	6252	6740	7193	7619	8022	
22		5612	6254	6834	7367	7863	8328	8768	
23			6809	7441	8021	8561	9068	9547	
24			7387	8072	8702	9287	9837	10357	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees ≥ 9 inches d.b.h. $Y = 2.70965 (D^2)^{0.95672} (Mh)^{0.49188}$

Table 6.--Predicted green weight of stem wood and bark to 7-inch d.o.b. top for southern pine in the Coastal Plain, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)									
	20	30	40	50	60	70	80	90	100	
----- Pounds 3/ -----										
9	249	336	417	493	565	634	700			
10	374	507	628	742	850	954	1054			
11	682	845	999	1145	1284	1419	1550			
12	861	1068	1261	1446	1622	1792	1957			
13	1045	1296	1531	1754	1969	2175	2375	2570		
14	1235	1532	1809	2074	2327	2571	2807	3037		
15	1433	1776	2099	2405	2699	2982	3256	3523		
16	1638	2031	2400	2750	3086	3410	3724	4029		
17	2297	2714	3110	3490	3856	4211	4556			
18	2575	3042	3486	3912	4322	4720	5107			
19	2864	3384	3878	4352	4808	5251	5681			
20	3166	3741	4287	4810	5315	5804	6279			
21		4112	4712	5288	5843	6380	6903			
22		4499	5155	5785	6392	6980	7551			
23		4900	5615	6301	6962	7602	8225			
24		5316	6092	6836	7553	8248	8924			

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees < 9 inches d.b.h. $Y = 1.68293 (D^2 H_4)^{0.74729}$

Trees ≥ 9 inches d.b.h. $Y = 0.70338 (D^2)^{0.94581} (H_4)^{0.74729}$

$$Y_R = e^{(-2.45015 (d)^{4.64713} (D)^{-4.81445})}$$

Table 8.--Predicted green weight of stem wood and bark to 4-inch d.o.b. top for southern pine in the Coastal Plain, based on d.b.h. and saw-log merchantable height 1/ 2/

D.b.h. class (inches)	Merchantable saw-log top (16-ft logs)								
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
----- Pounds 3/ -----									
9	533	628	747	873	1001				
10	678	782	921	1071	1224				
11	949	1111	1286	1467	1649	1831			
12	1129	1315	1518	1728	1941	2154			
13	1323	1533	1767	2009	2254	2499	2745		
14	1529	1766	2032	2307	2587	2868	3148		
15	1748	2014	2313	2624	2941	3258	3576	3893	
16	1979	2275	2610	2959	3314	3671	4028	4385	
17	2223	2550	2922	3312	3707	4106	4504	4902	
18	2478	2839	3250	3682	4120	4562	5004	5445	
19		3141	3594	4069	4553	5040	5527	6014	
20		3457	3953	4473	5004	5538	6074	6608	
21		3785	4327	4895	5474	6058	6643	7227	
22		4128	4715	5333	5964	6599	7235	7871	
23			5119	5789	6472	7160	7850	8539	
24			5538	6261	6998	7742	8487	9232	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees ≥ 9 inches d.b.h. $Y = 0.51280 (D^2)^{0.91304} (Mh)^{0.89434}$

$$Y_R = e^{55.42551 (Mh)^{-1.56082} [(1.0-d^2/0.6084D^2)^2]^{0.63878}}$$

Table 9.--Predicted green weight of stem wood and bark to saw-log top for southern pine in the Coastal Plain, based on d.b.h. and saw-log merchantable height 1/ 2/

D.b.h. class (inches)	Merchantable saw-log top (16-ft logs)								
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
----- Pounds 3/ -----									
9	353	503	648	789	927				
10	428	610	786	957	1124				
11		726	935	1139	1338	1534	1726		
12		851	1096	1335	1568	1798	2024		
13		985	1269	1545	1815	2081	2342	2600	
14		1128	1452	1769	2078	2382	2682	2977	
15		1280	1648	2006	2357	2702	3042	3377	3708
16		1440	1854	2257	2652	3040	3422	3799	4172
17		1608	2071	2521	2962	3396	3823	4244	4661
18		1785	2298	2798	3288	3769	4243	4711	5173
19		2537	3089	3629	4160	4684	5200	5710	
20		2786	3392	3986	4569	5143	5711	6271	
21		3046	3708	4357	4995	5623	6243	6855	
22		3316	4037	4743	5438	6121	6796	7463	
23			4378	5144	5897	6639	7371	8094	
24				4732	5560	6374	7175	7966	8748

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees \geq 9 inches d.b.h. $Y = 0.51280 (D^2) 0.91304 (Th) 0.89434$

Table 11.--Predicted green weight of stem wood and bark to 4-inch d.o.b. top for southern pine in the Piedmont, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)								
	30	40	50	60	70	80	90	100	110
----- Pounds 3/ -----									
5	57	75	93	111	129				
6	123	162	201	239	277				
7	194	256	317	378	439	499			
8	271	358	443	528	613	697			
9	355	469	581	692	803	913	1022		
10	448	591	732	872	1012	1150	1288		
11	724	898	1069	1240	1410	1579	1748		
12	870	1078	1285	1490	1694	1898	2100		
13	1029	1275	1519	1762	2003	2244	2483	2721	
14	1200	1487	1773	2056	2337	2618	2897	3175	
15	1385	1716	2045	2372	2697	3021	3343	3663	
16	1583	1962	2338	2711	3083	3452	3820	4187	
17		2223	2650	3073	3494	3913	4330	4746	
18		2502	2981	3458	3932	4403	4873	5340	
19		2797	3333	3866	4395	4923	5447	5970	
20		3109	3705	4297	4886	5472	6055	6636	
21		3438	4097	4752	5403	6051	6696	7338	
22		3784	4509	5230	5946	6659	7369	8077	
23		4147	4942	5731	6517	7298	8076	8851	
24		4527	5394	6256	7114	7967	8816	9662	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees \geq 5.0 inches d.b.h. $Y = 0.15179 (D^2) 1.02917 (Th) 0.96160$

$$Y_R = e^{(-2.77201 (d)^4 - 7.8156 (D)^{-5} - 0.01343)}$$

Table 10.--Predicted green weight of total tree (wood, bark, and foliage) for southern pine in the Piedmont, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)								
	20	30	40	50	60	70	80	90	100
----- Pounds 3/ -----									
1	5	7	9	11					
2	16	24	31	38					
3	34	50	65	80	95				
4	58	85	111	136	161				
5		128	167	205	243	280			
6		188	245	301	357	411			
7		260	339	417	493	569	643		
8		345	450	553	654	754	852		
9		442	577	708	838	966	1093	1218	
10		552	720	884	1046	1206	1364	1521	
11			880	1081	1279	1475	1668	1859	2049
12			1057	1299	1537	1772	2004	2234	2462
13			1252	1538	1819	2097	2372	2644	2914
14			1463	1797	2127	2452	2773	3091	3407
15			1692	2079	2460	2835	3207	3575	3940
16			1939	2382	2818	3248	3674	4096	4514
17				2706	3202	3691	4175	4654	5129
18				3053	3612	4164	4710	5250	5786
19				3421	4048	4666	5278	5884	6484
20				3812	4510	5199	5881	6555	7225
21				4225	4999	5762	6518	7265	8007
22				4660	5514	6356	7189	8014	8832
23				5118	6055	6980	7895	8801	9699
24				5598	6623	7635	8636	9627	10610

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees $<$ 5.0 inches d.b.h. $Y = 0.28557 (D^2 Th) 0.92236$

Trees \geq 5.0 inches d.b.h. $Y = 0.18703 (D^2) 1.05385 (Th) 0.92236$

Table 12.--Predicted green weight of stem wood and bark to 7-inch d.o.b. top for southern pine in the Piedmont, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)								
	30	40	50	60	70	80	90	100	110
----- Pounds 3/ -----									
9	223	294	364	434	504	573	641		
10	340	449	556	663	768	874	978		
11		611	757	902	1046	1189	1332	1474	
12		779	966	1151	1335	1518	1700	1881	
13		956	1184	1411	1637	1861	2084	2306	2528
14		1141	1414	1685	1954	2221	2488	2753	3017
15		1336	1656	1973	2288	2602	2914	3224	3534
16		1542	1911	2277	2641	3003	3363	3722	4079
17		2181	2599	3014	3427	3838	4248	4655	
18		2466	2939	3408	3875	4340	4803	5264	
19		2767	3297	3824	4347	4869	5388	5905	
20		3083	3674	4261	4844	5425	6004	6580	
21		3415	4070	4720	5367	6010	6651	7290	
22		3764	4485	5202	5915	6624	7331	8034	
23		4129	4921	5707	6489	7267	8042	8814	
24		4512	5376	6235	7089	7939	8786	9629	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees \geq 9.0 inches d.b.h. $Y = 0.15179 (D^2) 1.02917 (Th) 0.96160$

$$Y_R = e^{(-2.77201 (d)^4 - 7.8156 (D)^{-5} - 0.01343)}$$

Table 13.--Predicted green weight of total tree (wood, bark, and foliage) for southern pine in the Piedmont, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)									
	10	20	30	40	50	60	70	80	90	100
----- Pounds 3/ -----										
5	111	188	255	317						
6	146	247	336	419						
7		313	425	529	626	719				
8		383	521	648	767	881				
9	458	623	774	917	1053	1184	1310			
10	565	768	956	1132	1300	1462	1617			
11	930	1156	1370	1573	1768	1957	2140			
12	1106	1376	1630	1872	2104	2328	2546			
13	1298	1615	1913	2196	2469	2732	2988	3236		
14	1505	1872	2218	2547	2863	3168	3465	3753		
15	1728	2149	2546	2923	3286	3637	3977	4308		
16	1965	2445	2896	3326	3739	4136	4524	4901		
17		2760	3269	3754	4220	4670	5107	5532		
18		3094	3665	4208	4731	5235	5725	6201		
19		3447	4083	4689	5270	5832	6378	6909		
20		3819	4523	5195	5839	6462	7066	7654		
21			4987	5726	6437	7124	7790	8438		
22			5472	6284	7064	7818	8548	9260		
23			5981	6868	7720	8544	9343	10120		
24			6512	7478	8406	9302	10172	11018		

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees < 9 inches d.b.h. $Y = 1.67864 (D^2 H_4)^{0.75886}$

Trees ≥ 9 inches d.b.h. $Y = 0.58403 (D^2)^{0.99911} (H_4)^{0.75886}$

Table 15.--Predicted green weight of stem wood and bark to 7-inch d.o.b. top for southern pine in the Piedmont, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)									
	20	30	40	50	60	70	80	90	100	
----- Pounds 3/ -----										
9	237	324	405	481	554	624	692			
10	357	488	610	725	835	940	1043			
11	657	821	975	1123	1265	1403	1537			
12	830	1036	1232	1418	1598	1771	1940			
13	1007	1258	1495	1722	1940	2151	2356	2556		
14	1192	1489	1769	2037	2295	2545	2788	3024		
15	1384	1729	2055	2366	2666	2956	3237	3512		
16	1585	1980	2353	2710	3093	3385	3708	4023		
17		2243	2666	3070	3459	3883	4306	4716	5117	
18		2519	2993	3447	3841	4328	4799	5256	5703	
19		2807	3336	3841	4254	4793	5314	5821	6315	
20		3109	3695	4254	4793	5314	5821	6315		
21			4069	4685	5278	5852	6411	6955		
22			4459	5134	5784	6414	7025	7622		
23			4865	5602	6312	6998	7666	8317		
24			5288	6089	6860	7606	8332	9039		

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees < 9 inches d.b.h. $Y = 1.28713 (D^2 H_4)^{0.77347}$

Trees ≥ 9 inches d.b.h. $Y = 0.54663 (D^2)^{0.96836} (H_4)^{0.77347}$

$$Y_R = e^{(-2.77201 (d)^4 - 4.78156 (D)^{-5.01343})}$$

Table 14.--Predicted green weight of stem wood and bark to 4-inch d.o.b. top for southern pine in the Piedmont, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)									
	10	20	30	40	50	60	70	80	90	100
----- Pounds 3/ -----										
5	48	82	112	140						
6	94	160	220	274						
7		235	321	401	477	549				
8		306	419	523	622	716				
9	378	517	646	767	883	995	1104			
10	470	643	803	954	1099	1238	1373			
11	779	973	1157	1332	1500	1664	1822			
12	926	1157	1375	1583	1784	1978	2167			
13	1084	1355	1610	1854	2089	2316	2537	2752		
14	1254	1567	1862	2144	2415	2678	2933	3182		
15	1435	1792	2130	2453	2763	3064	3356	3641		
16	1627	2033	2415	2781	3133	3474	3806	4129		
17	1831	2287	2718	3129	3526	3909	4282	4646		
18		2556	3037	3497	3940	4368	4785	5191		
19		2838	3373	3884	4376	4852	5315	5766		
20		3135	3726	4290	4834	5360	5871	6369		
21			4096	4716	5313	5892	6454	7001		
22			4483	5161	5815	6448	7063	7662		
23			4886	5626	6338	7028	7698	8352		
24			5306	6110	6883	7632	8360	9070		

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees < 9 inches d.b.h. $Y = 1.28713 (D^2 H_4)^{0.77347}$

Trees ≥ 9 inches d.b.h. $Y = 0.54663 (D^2)^{0.96836} (H_4)^{0.77347}$

$$Y_R = e^{(-2.77201 (d)^4 - 4.78156 (D)^{-5.01343})}$$

Table 16.--Predicted green weight of total tree (wood, bark, and foliage) for southern pine in the Piedmont, based on d.b.h. and saw-log merchantable height 1/ 2/

D.b.h. class (inches)	Merchantable saw-log top (16-ft logs)									
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	
----- Pounds 3/ -----										
9	622	784	925	1052	1169					
10	755	952	1123	1277	1419					
11		1134	1338	1521	1691	1849				
12		1330	1569	1785	1984	2169	2344			
13		1541	1818	2068	2298	2513	2716	2908		
14		1766	2083	2370	2634	2880	3112	3332		
15		2004	2365	2690	2990	3269	3532	3783	4022	
16		2257	2663	3029	3366	3681	3977	4259	4528	
17		2523	2977	3386	3763	4114	4446	4761	5062	
18		2802	3306	3761	4179	4570	4938	5288	5622	
19			3652	4154	4616	5047	5454	5840	6209	
20			4013	4564	5072	5546	5993	6418	6823	
21			4389	4992	5548	6067	6555	7020	7463	
22			4781	5438	6043	6608	7140	7646	8129	
23			5901	6557	7170	7748	8297	8821		
24			6381	7091	7754	8378	8972	9539		

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees ≥ 9 inches d.b.h. $Y = 2.10504 (D^2)^{0.91881} (Mh)^{0.58518}$

Table 17.--Predicted green weight of stem wood and bark to 4-inch top for southern pine in the Piedmont, based on d.b.h. and saw-log merchantable height 1/ 2/

D.b.h. class (inches)	Merchantable saw-log top (16-ft logs)								
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
----- Pounds 3/ -----									
9	513	598	712	833	957				
10	652	744	877	1022	1172				
11		903	1058	1228	1405	1584	1763		
12		1075	1252	1451	1657	1866	2076		
13		1259	1461	1689	1927	2168	2411	2655	
14		1456	1684	1944	2215	2491	2769	3048	
15		1665	1921	2214	2521	2834	3149	3465	3781
16		1886	2171	2500	2845	3196	3551	3906	4262
17		2119	2435	2801	3186	3579	3975	4372	4769
18		2364	2713	3118	3545	3980	4420	4861	5302
19			3004	3450	3921	4401	4887	5373	5860
20			3307	3797	4313	4841	5375	5909	6444
21			3624	4159	4723	5301	5883	6468	7053
22			3954	4536	5150	5778	6413	7050	7687
23				4927	5593	6275	6963	7655	8346
24				5333	6053	6790	7534	8282	9029

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees \geq 9 inches d.b.h. $Y = 0.44802 (D^2)^{0.92193} (M_h)^{0.90894}$

$$Y_R = e^{-74.08964 (M_h) - 1.66415 [(1.0 - D^2)/0.6084 D^2]^2} 0.58630$$

Table 19.--Predicted green weight of total tree (wood, bark, and foliage) for planted slash pine in the Coastal Plain, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)								
	20	30	40	50	60	70	80	90	
----- Pounds 3/ -----									
3	35	52	69	86	102				
4	62	91	121	150	179				
5		141	186	230	275	319			
6		200	264	328	391	454			
7		270	356	442	527	611	696		
8		349	461	572	682	791	901		
9		438	579	718	856	994	1131	1267	
10		537	709	880	1050	1218	1386	1554	
11			853	1058	1262	1465	1667	1868	
12			1009	1252	1493	1733	1972	2210	
13			1178	1462	1743	2024	2302	2580	
14			1360	1687	2012	2335	2657	2978	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.23369 (D^2 Th)^{0.96673}$

Table 18.--Predicted green weight of stem wood and bark to saw-log top for southern pine in the Piedmont, based on d.b.h. and saw-log merchantable height 1/ 2/

D.b.h. class (inches)	Merchantable saw-log top (16-ft logs)								
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
----- Pounds 3/ -----									
9	335	479	620	757	892				
10	406	582	753	919	1083				
11		694	897	1096	1291	1483	1673		
12		815	1053	1287	1516	1742	1964		
13		944	1221	1491	1757	2018	2277	2532	
14		1083	1400	1710	2014	2314	2610	2903	
15		1229	1590	1942	2287	2628	2964	3297	3626
16		1385	1790	2187	2576	2960	3339	3713	4084
17		1549	2002	2446	2881	3310	3734	4152	4567
18		1721	2225	2717	3201	3678	4149	4614	5074
19		2458	3002	3537	4064	4583	5097	5606	
20		2702	3300	3888	4467	5038	5603	6162	
21		2956	3611	4254	4887	5512	6131	6743	
22		3221	3934	4635	5325	6006	6680	7346	
23			4270	5031	5780	6519	7250	7974	
24			4619	5441	6252	7051	7842	8625	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees \geq 9 inches d.b.h. $Y = 0.44802 (D^2)^{0.92193} (M_h)^{0.90894}$

Table 20.--Predicted green weight of stem wood and bark to 2-inch d.o.b. top for planted slash pine in the Coastal Plain, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)								
	20	30	40	50	60	70	80	90	
----- Pounds 3/ -----									
3	25	36	48	60	71				
4	50	73	97	120	143				
5		117	154	191	228	264			
6		168	222	275	327	380			
7		227	300	372	443	514	584		
8		295	389	482	574	666	757		
9		370	488	605	721	836	951	1065	
10		454	598	741	884	1025	1166	1305	
11			719	891	1062	1232	1401	1569	
12			850	1054	1256	1457	1657	1855	
13			992	1230	1465	1700	1933	2165	
14			1144	1418	1690	1960	2229	2497	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.20458 (D^2 Th)^{0.96236}$

$$Y_R = e^{(-0.94583 (d)^{4.56744}) (D)^{-4.26956}}$$

Table 21.--Predicted green weight of stem wood and bark to 4-inch d.o.b. top for planted slash pine in the Coastal Plain, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)						
	30	40	50	60	70	80	90
----- Pounds 3/ -----							
5	69	91	113	134	156		
6	132	174	216	257	298		
7	200	264	328	391	453	515	
8	274	362	449	535	620	705	
9	354	468	580	691	801	911	1020
10	441	582	721	860	997	1134	1270
11		706	875	1043	1210	1375	1541
12		840	1041	1240	1439	1636	1832
13		983	1219	1452	1685	1916	2145
14		1137	1409	1679	1948	2215	2481

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.20458 (D^2 H)^{0.96236}$

$$Y_R = e^{(-0.94583 (d)^{4.56744} (D)^{-4.26956})}$$

Table 23.--Predicted green weight of total tree (wood, bark, and foliage) for planted slash pine in the Coastal Plain, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)						
	10	20	30	40	50	60	70
----- Pounds 3/ -----							
5	121	203	275	341			
6	158	267	361	449			
7		336	456	565	668	767	
8		411	557	691	817	937	
9		490	664	825	975	1118	1255
10		574	778	966	1142	1309	1470
11			898	1114	1318	1511	1696
12			1023	1270	1502	1722	1933
13				1154	1432	1693	1942
14					1290	1601	1893
						2170	2436
							2693

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 1.90965 (D^2 H_4)^{0.75067}$

Table 22.--Predicted green weight of stem wood and bark to 6-inch d.o.b. top for planted slash pine in the Coastal Plain, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)						
	30	40	50	60	70	80	90
----- Pounds 3/ -----							
7	99	131	162	193	224	255	
8	184	243	301	359	416	474	
9	279	367	456	543	630	716	802
10	378	499	619	737	855	973	1089
11		637	790	941	1092	1242	1391
12		782	970	1156	1341	1524	1707
13		935	1159	1381	1602	1822	2041
14		1096	1358	1619	1878	2135	2392

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.20458 (D^2 H)^{0.96236}$

$$Y_R = e^{(-0.94583 (d)^{4.56744} (D)^{-4.26956})}$$

Table 24.--Predicted green weight of stem wood and bark to 2-inch d.o.b. top for planted slash pine in the Coastal Plain, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)						
	10	20	30	40	50	60	70
----- Pounds 3/ -----							
5	100	168	227	282			
6	133	223	302	375			
7		282	382	474	560	642	
8		346	468	581	686	786	
9		413	559	693	819	939	1054
10		484	655	812	960	1100	1235
11			756	937	1107	1269	1424
12			861	1068	1262	1446	1623
13			971	1204	1422	1630	1830
14			1085	1345	1589	1822	2044
							2259

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 1.64209 (D^2 H_4)^{0.74813}$

$$Y_R = e^{(-0.94583 (d)^{4.56744} (D)^{-4.26956})}$$

Table 25.--Predicted green weight of stem wood and bark to 4-inch d.o.b. top for planted slash pine in the Coastal Plain, based on d.b.h. and height to the 4-inch d.o.b. top $\frac{1}{2}$

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)							
	10	20	30	40	50	60	70	80
----- Pounds $\frac{3}{4}$ -----								
5	59	99	134	166				
6	104	175	237	294				
7	249	337	418	494	567			
8	322	436	541	639	732			
9	395	536	664	785	900	1009	1116	
10	471	637	790	934	1070	1201	1327	
11	742	920	1087	1246	1399	1546		
12	850	1054	1246	1428	1603	1771		
13	962	1193	1410	1616	1813	2004		
14	1078	1336	1579	1810	2031	2244		

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 1.64209 (D^2 H_4)^{0.74813}$

$$Y_R = e^{(-0.94583 (d)^{4.56744} (D)^{-4.26956})}$$

Table 27.--Predicted green weight of total tree (wood, bark, and foliage) for planted loblolly pine in the Piedmont, based on d.b.h. and total height $\frac{1}{2}$

D.b.h. class (inches)	Total-tree height (feet)							
	20	30	40	50	60	70	80	90
----- Pounds $\frac{3}{4}$ -----								
3	29	43	58	72				
4	51	77	103	129				
5		121	161	201	241	281		
6		174	231	289	347	405		
7			315	393	472	551	629	708
8			411	514	617	719	822	925
9				520	650	780	910	1040
10				642	803	963	1124	1284
11					971	1165	1360	1554
12					1156	1387	1618	1849
13						1356	1627	1899
14						1573	1887	2202
							2516	2830

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.16115 (D^2 Th)^{0.99956}$

Table 26.--Predicted green weight of stem wood and bark to 6-inch d.o.b. top for planted slash pine in the Coastal Plain, based on d.b.h. and height to the 4-inch d.o.b. top $\frac{1}{2}$

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)							
	20	30	40	50	60	70	80	
----- Pounds $\frac{3}{4}$ -----								
7	123	167	207	244	280			
8	216	293	363	429	492			
9	311	421	522	617	707	793	877	
10	404	547	678	801	918	1030	1138	
11	670	831	982	1125	1263	1395		
12	792	983	1161	1331	1493	1650		
13	915	1135	1341	1537	1725	1906		
14	1039	1288	1522	1745	1958	2164		

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 1.64209 (D^2 H_4)^{0.74813}$

$$Y_R = e^{(-0.94583 (d)^{4.56744} (D)^{-4.26956})}$$

Table 28.--Predicted green weight of stem wood and bark to 2-inch d.o.b. top for planted loblolly pine in the Piedmont, based on d.b.h. and total height $\frac{1}{2}$

D.b.h. class (inches)	Total-tree height (feet)							
	20	30	40	50	60	70	80	90
----- Pounds $\frac{3}{4}$ -----								
3	18	27	36	45				
4	38	58	78	97				
5		96	128	161	194	227		
6		141	189	237	286	335		
7			261	327	394	461	529	596
8			344	431	519	608	696	785
9			437	549	661	774	887	1000
10			543	681	821	960	1100	1241
11				828	997	1167	1337	1507
12				989	1191	1394	1597	1801
13				1165	1402	1641	1880	2120
14				1355	1631	1909	2187	2466

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.11576 (D^2 Th)^{1.01935}$

$$Y_R = e^{(-1.33918 (d)^{4.40499} (D)^{-4.24150})}$$

Table 29.--Predicted green weight of stem wood and bark to 4-inch d.o.b. top for planted loblolly pine in the Piedmont, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Tree-tree height (feet)						
	30	40	50	60	70	80	90
----- Pounds 3/ -----							
5	51	69	87	104	122		
6	106	142	178	215	251		
7	168	225	282	340	397	455	514
8	235	316	396	477	558	640	721
9		416	522	628	735	842	950
10		525	659	794	929	1065	1200
11		645	810	975	1141	1308	1475
12		776	974	1173	1373	1573	1774
13		918	1152	1387	1623	1860	2097
14		1071	1344	1619	1894	2170	2447

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.11576 (D^2 H)^{1.01935}$

$$Y_R = e^{(-1.33918 (d)^{4.40499} (D)^{-4.24150})}$$

Table 31.--Predicted green weight of total tree (wood, bark, and foliage) for planted loblolly pine in the Piedmont based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)							
	10	20	30	40	50	60	70	80
----- Pounds 3/ -----								
5	105	181	249	312	372			
6	140	241	331	415	494			
7		307	422	529	630	726	820	
8		378	520	652	776	895	1010	
9		455	626	784	934	1077	1215	1349
10		537	738	924	1101	1270	1433	1592
11			857	1073	1279	1475	1664	1848
12			982	1230	1465	1691	1908	2118
13				1113	1395	1661	1917	2163
14					1250	1567	1866	2153
								2429
								2697

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 1.38892 (D^2 H_4)^{0.78378}$

Table 30.--Predicted green weight of stem wood and bark to 6-inch d.o.b. top for planted loblolly pine in the Piedmont, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Tree-tree height (feet)						
	30	40	50	60	70	80	90
----- Pounds 3/ -----							
7	77	103	130	156	183	209	236
8	151	203	255	307	359	412	464
9		318	399	481	563	645	727
10		443	556	669	783	897	1012
11		576	723	870	1018	1167	1316
12		717	900	1084	1268	1453	1639
13		867	1089	1311	1535	1758	1983
14		1028	1290	1553	1818	2083	2349

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.11576 (D^2 H)^{1.01935}$

$$Y_R = e^{(-1.33918 (d)^{4.40499} (D)^{-4.24150})}$$

Table 32.--Predicted green weight of stem wood and bark to 2-inch d.o.b. top for planted loblolly pine in the Piedmont, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)							
	10	20	30	40	50	60	70	80
----- Pounds 3/ -----								
5	84	145	201	253	303			
6	114	198	274	344	412			
7		255	353	444	530	614	694	
8		317	438	551	659	762	862	
9		383	529	666	796	921	1042	1160
10		454	627	789	943	1091	1235	1374
11			731	920	1099	1272	1439	1601
12			840	1057	1264	1462	1654	1840
13				955	1202	1437	1662	1880
14					1075	1353	1618	1871
								2355

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 1.04334 (D^2 H_4)^{0.79941}$

$$Y_R = e^{(-1.33918 (d)^{4.40499} (D)^{-4.24150})}$$

Table 33.--Predicted green weight of stem wood and bark to 4-inch d.o.b. top for planted loblolly pine in the Piedmont, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)							
	10	20	30	40	50	60	70	80
----- Pounds 3/ -----								
5	45	78	108	136	163			
6	85	149	205	259	309			
7		220	304	382	457	529	598	
8		291	402	506	605	700	792	
9		364	503	633	757	875	990	1102
10		439	607	764	913	1056	1195	1329
11			715	900	1075	1244	1407	1566
12			827	1041	1245	1440	1629	1813
13			945	1189	1421	1644	1860	2069
14			1067	1343	1605	1857	2100	2337

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

$$3/ Y = 1.04334 (D^2 H_4)^{0.79941}$$

$$Y_R = e^{(-1.33918 (d) ^{4.40499} (D) ^{-4.24150})}$$

Table 35.--Predicted volume of total tree (wood only) for southern pine in the Coastal Plain, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)									
	20	30	40	50	60	70	80	90	100	110
----- Cubic feet 3/ -----										
1	0.04	0.06	0.09	0.11						
2	0.17	0.26	0.35	0.43						
3	0.39	0.58	0.78	0.98	1.18					
4	0.69	1.05	1.40	1.75	2.10					
5	1.64	2.19	2.74	3.30	3.85					
6	2.42	3.23	4.05	4.87	5.69					
7	3.36	4.49	5.63	6.77	7.91	9.05				
8	4.47	5.98	7.49	9.00	10.52	12.03				
9	5.75	7.69	9.63	11.58	13.53	15.48	17.43			
10	7.20	9.63	12.06	14.50	16.94	19.38	21.83			
11		11.81	14.79	17.77	20.77	23.76	26.76	29.76		
12		14.22	17.81	21.41	25.01	28.62	32.23	35.84		
13		16.87	21.13	25.40	29.67	33.95	38.24	42.53	46.82	
14		19.77	24.76	29.76	34.77	39.78	44.80	49.82	54.85	
15		22.91	28.69	34.48	40.29	46.10	51.92	57.74	63.57	
16		26.29	32.93	39.58	46.24	52.91	59.59	66.28	72.97	
17			37.49	45.06	52.64	60.23	67.83	75.44	83.06	
18			42.36	50.91	59.48	68.06	76.65	85.24	93.85	
19			47.54	57.15	66.76	76.39	86.03	95.68	105.34	
20			53.05	63.76	74.50	85.24	96.00	106.77	117.54	
21			58.88	70.77	82.68	94.61	106.55	118.50	130.46	
22			65.03	78.17	91.32	104.49	117.68	130.88	144.09	
23			71.51	85.96	100.42	114.91	129.41	143.92	158.45	
24			78.32	94.14	109.98	125.85	141.73	157.62	173.53	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

$$3/ \text{Trees } < 5.0 \text{ inches d.b.h. } Y = 0.00206 (D^2 H_4)^{1.00901}$$

$$\text{Trees } \geq 5.0 \text{ inches d.b.h. } Y = 0.00170 (D^2)^{1.06837} (H_4)^{1.00901}$$

Table 34.--Predicted green weight of stem wood and bark to 6-inch d.o.b. top for planted loblolly pine in the Piedmont, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)							
	20	30	40	50	60	70	80	
----- Pounds 3/ -----								
7	101	140	176	210	243	275		
8	187	259	326	389	450	510		
9	278	385	484	579	670	758	843	
10	370	511	644	769	890	1007	1120	
11		638	803	959	1110	1255	1397	
12		765	962	1150	1331	1505	1675	
13		893	1124	1344	1554	1758	1956	
14		1024	1289	1540	1782	2016	2243	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

$$3/ Y = 1.04334 (D^2 H_4)^{0.79941}$$

$$Y_R = e^{(-1.33918 (d) ^{4.40499} (D) ^{-4.24150})}$$

Table 36.--Predicted volume of stem wood to 4-inch d.o.b. top for southern pine in the Coastal Plain, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)									
	30	40	50	60	70	80	90	100	110	
----- Cubic feet 3/ -----										
5	0.82	1.10	1.37	1.65	1.94					
6	1.72	2.30	2.89	3.48	4.07					
7	2.69	3.60	4.52	5.44	6.36	7.29				
8	3.72	4.99	6.26	7.54	8.82	10.10				
9	4.85	6.50	8.16	9.82	11.49	13.16	14.84			
10	6.09	8.16	10.24	12.33	14.42	16.52	18.62			
11		9.97	12.51	15.06	17.62	20.18	22.75	25.32		
12		11.94	14.99	18.04	21.10	24.17	27.25	30.33		
13		14.08	17.67	21.27	24.88	28.50	32.13	35.76	39.41	
14		16.39	20.56	24.76	28.96	33.17	37.39	41.62	45.86	
15		18.87	23.67	28.50	33.34	38.19	43.05	47.92	52.80	
16		21.52	27.00	32.50	38.02	43.55	49.09	54.65	60.21	
17		30.54	36.77	43.01	49.26	55.53	61.82	68.11		
18		34.30	41.29	48.30	55.33	62.37	69.43	76.50		
19		38.28	46.08	53.91	61.75	69.61	77.48	85.37		
20		42.48	51.14	59.82	68.52	77.24	85.98	94.74		
21		46.90	56.46	66.04	75.65	85.28	94.93	104.59		
22		51.54	62.04	72.57	83.13	93.71	104.32	114.94		
23		56.40	67.89	79.42	90.97	102.55	114.15	125.78		
24		61.48	74.01	86.57	99.17	111.79	124.44	137.11		

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

$$3/ \text{Trees } < 5.0 \text{ inches d.b.h. } Y = 0.00184 (D^2)^{1.01281} (H_4)^{1.01723}$$

$$Y_R = e^{(-2.50663 (d) ^{4.81836} (D) ^{-5.01469})}$$

Table 37.--Predicted volume of stem wood to 7-inch d.o.b. top for southern pine in the Coastal Plain, based on d.b.h. and total height $\frac{1}{2}$ /

D.b.h. class (inches)	Total-tree height (feet)								
	30	40	50	60	70	80	90	100	110
Cubic feet 3/									
9	3.09	4.14	5.19	6.25	7.31	8.37	9.44		
10	4.66	6.25	7.84	9.44	11.04	12.65	14.26		
11			8.45	10.60	12.77	14.93	17.11	19.28	21.46
12			10.73	13.47	16.21	18.96	21.72	24.49	27.26
13			13.11	16.45	19.80	23.16	26.53	29.91	33.29
14			15.60	19.57	23.56	27.56	31.57	35.59	39.62
15			18.22	22.86	27.52	32.19	36.88	41.57	46.27
16			20.98	26.33	31.69	37.07	42.46	47.87	53.28
17					29.98	36.09	42.21	48.35	54.51
18					33.83	40.72	47.63	54.56	61.51
19						37.88	45.59	53.33	61.09
20							68.87	76.66	84.47
21							76.66	85.28	93.96
22								94.31	103.92
23								103.78	114.35
24									113.69
									125.26
									124.03
									136.65

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees ≥ 9 inches d.b.h. $Y = 0.00184 (D^2)^{1.01281} (H_4)^{1.01723}$

$$Y_R = e^{(-2.50663 (d)^4.81836 (D)^{-5.01469})}$$

Table 39.--Predicted volume of stem wood to 4-inch d.o.b. top for southern pine in the Coastal Plain, based on d.b.h. and height to a 4-inch d.o.b. top $\frac{1}{2}$ /

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)									
	10	20	30	40	50	60	70	80	90	100
Cubic feet 3/										
5	0.74	1.25	1.70	2.11						
6	1.42	2.39	3.25	4.04						
7	3.46	4.70	5.84	6.91	7.93					
8	4.48	6.08	7.56	8.95	10.27					
9	5.49	7.46	9.27	10.98	12.60	14.16	15.66			
10	6.82	9.27	11.52	13.64	15.65	17.59	19.46			
11		11.22	13.95	16.51	18.95	21.29	23.56	25.75		
12		13.33	16.57	19.61	22.51	25.29	27.98	30.59		
13		15.59	19.38	22.95	26.34	29.59	32.74	35.79	38.75	
14		18.02	22.40	26.52	30.44	34.20	37.83	41.36	44.78	
15		20.61	25.62	30.32	34.81	39.11	43.26	47.29	51.22	
16		23.36	29.03	34.37	39.45	44.33	49.04	53.60	58.05	
17		32.65	38.65	44.37	49.85	55.15	60.28	65.28		
18		36.47	43.18	49.56	55.68	61.60	67.34	72.92		
19		40.49	47.94	55.02	61.82	68.39	74.76	80.96		
20		44.71	52.93	60.76	68.27	75.52	82.55	89.40		
21			58.16	66.76	75.01	82.98	90.71	98.23		
22			63.63	73.04	82.07	90.79	99.24	107.47		
23			69.34	79.59	89.42	98.92	108.14	117.11		
24			75.28	86.40	97.08	107.40	117.40	127.14		

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees < 9 inches d.b.h. $Y = 0.02124 (D^2 H_4)^{0.75609}$

Trees ≥ 9 inches d.b.h. $Y = 0.00849 (D^2)^{0.96481} (H_4)^{0.75609}$

$$Y_R = e^{(-2.50663 (d)^4.81836 (D)^{-5.01469})}$$

Table 38.--Predicted volume of total tree (wood only) for southern pine in the Coastal Plain, based on d.b.h. and height to the 4-inch d.o.b. top $\frac{1}{2}$ /

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)									
	10	20	30	40	50	60	70	80	90	100
Cubic feet 3/										
5	1.71	2.81	3.76	4.63						
6	2.22	3.65	4.89	6.02						
7		4.56	6.11	7.52	8.83	10.07				
8		5.53	7.41	9.11	10.70	12.20				
9		6.55	8.78	10.80	12.68	14.46	16.16	17.79		
10		8.17	10.94	13.46	15.80	18.02	20.14	22.17		
11			13.35	16.42	19.28	21.99	24.57	27.05	29.45	
12			16.01	19.70	23.13	26.38	29.47	32.45	35.32	
13			18.92	23.28	27.34	31.18	34.84	38.36	41.75	45.04
14			22.09	27.18	31.92	36.40	40.67	44.78	48.74	52.59
15			25.52	31.40	36.87	42.04	46.98	51.72	56.30	60.74
16			29.21	35.93	42.19	48.11	53.76	59.19	64.43	69.51
17				40.78	47.89	54.61	61.03	67.19	73.13	78.90
18				45.96	53.97	61.54	68.77	75.71	82.41	88.91
19				51.45	60.42	68.90	76.99	84.77	92.27	99.55
20				57.27	67.26	76.70	85.70	94.36	102.71	110.81
21					74.48	84.93	94.90	104.48	113.73	122.70
22						82.08	93.60	104.59	115.15	125.35
23						90.07	102.71	114.77	126.36	137.55
24						98.45	112.27	125.45	138.11	150.34
									162.19	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees < 9 inches d.b.h. $Y = 0.03198 (D^2 H_4)^{0.72025}$

Trees ≥ 9 inches d.b.h. $Y = 0.00768 (D^2)^{1.04483} (H_4)^{0.72025}$

Table 40.--Predicted volume of stem wood to 7-inch d.o.b. top for southern pine in the Coastal Plain, based on d.b.h. and height to the 4-inch d.o.b. top $\frac{1}{2}$ /

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)								
	20	30	40	50	60	70	80	90	100
Cubic feet 3/									
9	3.49	4.75	5.90	6.98	8.01	9.01	9.96		
10	5.22	7.10	8.82	10.44	11.99	13.47	14.90		
11		9.51	11.82	13.99	16.06	18.05	19.97	21.83	
12		11.98	14.89	17.62	20.23	22.73	25.14	27.49	
13		14.52	18.05	21.36	24.52	27.55	30.48	33.32	36.08
14		17.15	21.32	25.24	28.97	32.55	36.01	39.36	42.63
15		19.90	24.74	29.28	33.61	37.77	41.78	45.67	49.46
16		22.78	28.31	33.51	38.47	43.22	47.81	52.27	56.60
17		32.05	37.94	43.55	48.93	54.13	59.17	64.08	
18		35.97	42.58	48.87	54.91	60.74	66.40	71.91	
19		40.06	47.43	54.44	61.17	67.66	73.97	80.10	
20		44.35	52.50	60.26	67.70	74.90	81.87	88.66	
21			57.79	66.33	74.53	82.45	90.13	97.60	
22			63.31	72.67	81.65	90.32	98.74	106.92	
23			69.05	79.26	89.06	98.52	107.70	116.63	
24			75.03	86.12	96.76	107.04	117.01	126.72	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees < 9 inches d.b.h. $Y = 0.02124 (D^2 H_4)^{0.75609}$

Trees ≥ 9 inches d.b.h. $Y = 0.00849 (D^2)^{0.96481} (H_4)^{0.75609}$

$$Y_R = e^{(-2.50663 (d)^4.81836 (D)^{-5.01469})}$$

Table 41.--Predicted volume of total tree (wood only) for southern pine in the Coastal Plain, based on d.b.h. and saw-log merchantable height 1/ 2/

D.b.h. class (inches)	Merchantable saw-log top (16-ft logs)								
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
----- <u>Cubic feet 3/</u> -----									
9	9.09	11.33	13.26	14.99	16.57				
10	11.10	13.84	16.20	18.31	20.24				
11	16.58	19.41	21.94	24.25	26.40	28.43			
12	19.56	22.89	25.88	28.61	31.15	33.53			
13	22.77	26.65	30.12	33.30	36.25	39.03	41.65		
14	26.20	30.67	34.67	38.33	41.73	44.92	47.94		
15	29.87	34.96	39.52	43.69	47.56	51.20	54.65	57.93	
16	33.76	39.51	44.66	49.38	53.76	57.87	61.77	65.47	
17	37.88	44.33	50.11	55.40	60.31	64.93	69.30	73.45	
18	42.21	49.41	55.85	61.74	67.22	72.37	77.23	81.87	
19	54.75	61.88	68.42	74.49	80.18	85.58	90.71		
20	60.34	68.21	75.41	82.10	88.38	94.33	99.99		
21	66.20	74.82	82.72	90.06	96.95	103.48	109.68		
22	72.30	81.73	90.36	98.37	105.90	113.02	119.81		
23	88.92	98.31	107.03	115.22	122.97	130.35			
24	96.40	106.58	116.03	124.91	133.31	141.31			

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees \geq 9 inches d.b.h. $Y = 0.02924 (D^2)^{0.94874} (Mh)^{0.55666}$

Table 43.--Predicted volume of stem wood to saw-log top for southern pine in the Coastal Plain, based on d.b.h. and saw-log merchantable height 1/ 2/

D.b.h. class (inches)	Merchantable saw-log top (16-ft logs)								
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
----- <u>Cubic feet 3/</u> -----									
9	4.78	6.98	9.14	11.29	13.42				
10	5.76	8.40	11.02	13.60	16.17				
11	9.95	13.04	16.10	19.14	22.15	25.14			
12	11.60	15.21	18.78	22.32	25.83	29.33			
13	13.37	17.53	21.64	25.71	29.76	33.79	37.79		
14	15.24	19.98	24.67	29.32	33.93	38.52	43.09		
15	17.22	22.57	27.87	33.12	38.34	43.52	48.68	53.81	
16	19.30	25.30	31.24	37.13	42.98	48.79	54.57	60.32	
17	21.49	28.17	34.78	41.33	47.84	54.31	60.74	67.15	
18	23.78	31.17	38.48	45.73	52.93	60.09	67.21	74.29	
19	34.29	42.34	50.32	58.24	66.12	73.95	81.75		
20	37.55	46.36	55.10	63.78	72.40	80.98	89.52		
21	40.94	50.54	60.07	69.53	78.93	88.28	97.59		
22	44.45	54.88	65.22	75.49	85.70	95.85	105.96		
23	59.37	70.56	81.67	92.71	103.69	114.63			
24	64.01	76.07	88.05	99.96	111.80	123.59			

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees \geq 9 inches d.b.h. $Y = 0.00657 (D^2)^{0.88455} (Mh)^{0.95758}$

Table 42.--Predicted volume of stem wood to 4-inch d.o.b. top for southern pine in the Coastal Plain, based on d.b.h. and saw-log merchantable height 1/ 2/

D.b.h. class (inches)	Merchantable saw-log top (16-ft logs)								
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0
----- <u>Cubic feet 3/</u> -----									
9	6.88	8.49	10.37	12.34	14.35				
10	8.66	10.47	12.68	15.03	17.43				
11	12.61	15.19	17.93	20.75	23.61	26.48			
12	14.91	17.87	21.05	24.32	27.64	30.98			
13	17.37	20.73	24.37	28.12	31.94	35.78	39.63		
14	19.97	23.76	27.89	32.16	36.49	40.87	45.26		
15	22.72	26.97	31.61	36.42	41.31	46.24	51.20	56.16	
16	25.61	30.34	35.53	40.90	46.38	51.90	57.45	63.01	
17	28.65	33.88	39.63	45.61	51.69	57.84	64.01	70.20	
18	31.83	37.58	43.93	50.53	57.26	64.05	70.87	77.72	
19	41.44	48.41	55.67	63.06	70.53	78.03	85.56		
20	45.47	53.08	61.02	69.11	77.28	85.49	93.73		
21	49.64	57.94	66.58	75.39	84.29	93.24	102.22		
22	53.98	62.97	72.34	81.90	91.56	101.28	111.03		
23	68.18	78.31	88.65	99.10	109.60	120.15			
24	73.57	84.48	95.62	106.88	118.21	129.58			

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees \geq 9 inches d.b.h. $Y = 0.00657 (D^2)^{0.88455} (Mh)^{0.95758}$

$$Y_R = e^{50.42885} (Mh)^{-1.56783} [(1.0 - D^2)/0.6084 D^2]^{0.64353}$$

Table 44.--Predicted volume of total tree (wood only) for southern pine in the Piedmont, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)									
	20	30	40	50	60	70	80	90	100	110
----- <u>Cubic feet 3/</u> -----										
1	0.04	0.07	0.09	0.11						
2	0.18	0.27	0.36	0.45						
3	0.41	0.61	0.82	1.02	1.23					
4	0.73	1.09	1.46	1.83	2.21					
5	1.72	2.30	2.89	3.47	4.06					
6	2.51	3.35	4.20	5.05	5.91					
7	3.44	4.61	5.77	6.95	8.12	9.29				
8	4.53	6.07	7.60	9.15	10.69	12.24				
9	5.78	7.73	9.70	11.66	13.63	15.60	17.58			
10	7.18	9.61	12.05	14.49	16.94	19.39	21.85			
11	11.70	14.66	17.64	20.62	23.60	26.59	29.58			
12	14.00	17.55	21.10	24.67	28.24	31.82	35.40			
13	16.51	20.70	24.89	29.10	33.31	37.52	41.75	45.98		
14	19.24	24.11	29.00	33.90	38.81	43.72	48.64	53.57		
15	22.18	27.80	33.43	39.08	44.74	50.40	56.08	61.76		
16	25.33	31.76	38.19	44.64	51.11	57.58	64.06	70.55		
17	35.98	43.28	50.59	57.91	65.25	72.59	79.94			
18	40.49	48.69	56.92	65.16	73.41	81.67	89.94			
19	45.26	54.44	63.63	72.84	82.07	91.30	100.55			
20	50.31	60.51	70.73	80.97	91.22	101.49	111.77			
21	55.63	66.91	78.21	89.54	100.88	112.23	123.60			
22	61.24	73.65	86.09	98.55	111.03	123.53	136.04			
23	67.11	80.72	94.35	108.01	121.69	135.39	149.10			
24	73.27	88.12	103.01	117.92	132.85	147.81	162.78			

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees $<$ 5.0 inches d.b.h. $Y = 0.00211 (D^2 Th)^{1.01241}$

Trees \geq 5.0 inches d.b.h. $Y = 0.00199 (D^2)^{1.03101} (Th)^{1.01241}$

Table 45.--Predicted volume of stem wood to 4-inch d.o.b. top for southern pine in the Piedmont, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)									
	30	40	50	60	70	80	90	100	110	Cubic feet 3/
5	0.81	1.09	1.37	1.65	1.93					
6	1.75	2.35	2.95	3.55	4.15					
7	2.76	3.70	4.64	5.59	6.55	7.50				
8	3.83	5.14	6.46	7.78	9.11	10.44				
9	5.00	6.71	8.42	10.15	11.87	13.61	15.35			
10	6.27	8.41	10.56	12.73	14.89	17.07	19.25			
11	10.27	12.90	15.54	18.18	20.84	23.50	26.17			
12	12.29	15.44	18.59	21.76	24.94	28.12	31.32			
13	14.48	18.18	21.90	25.63	29.37	33.13	36.89	40.66		
14	16.83	21.14	25.46	29.80	34.15	38.51	42.89	47.27		
15	19.36	24.31	29.28	34.27	39.27	44.29	49.32	54.36		
16	22.05	27.69	33.36	39.04	44.75	50.46	56.19	61.93		
17	31.30	37.70	44.13	50.57	57.03	63.50	69.99			
18	35.12	42.30	49.51	56.74	63.99	71.26	78.54			
19	39.16	47.17	55.21	63.27	71.36	79.46	87.58			
20	43.42	52.30	61.21	70.15	79.12	88.10	97.10			
21	47.90	57.70	67.53	77.39	87.28	97.19	107.12			
22	52.60	63.36	74.15	84.98	95.84	106.72	117.62			
23	57.52	69.28	81.09	92.93	104.80	116.70	128.62			
24	62.65	75.47	88.33	101.23	114.16	127.12	140.11			

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees ≥ 5.0 inches d.b.h. $Y = 0.00195 (D^2)^{1.00449} (Th)^{1.02075}$

$$Y_R = e^{(-3.10643) (d)^{4.65458} (D)^{-4.95963}}$$

Table 47.--Predicted volume of total tree (wood only) for southern pine in the Piedmont, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)									
	10	20	30	40	50	60	70	80	90	100
5	1.58	2.66	3.61	4.48						
6	2.08	3.50	4.75	5.89						
7	4.41	5.98	7.43	8.79	10.08					
8	5.39	7.32	9.08	10.74	12.32					
9	6.44	8.73	10.84	12.82	14.70	16.51	18.25			
10	7.93	10.76	13.36	15.80	18.12	20.34	22.49			
11	13.00	16.14	19.09	21.89	24.58	27.18	29.69			
12	15.46	19.19	22.69	26.03	29.22	32.31	35.30			
13	18.12	22.50	26.61	30.51	34.26	37.88	41.39	44.80		
14	21.00	26.07	30.83	35.36	39.70	43.89	47.95	51.90		
15	24.09	29.90	35.46	40.55	45.53	50.34	55.00	59.53		
16	27.38	33.99	40.20	46.10	51.76	57.23	62.52	67.68		
17	38.34	45.34	52.00	58.39	64.55	70.53	76.34			
18	42.96	50.80	58.26	65.41	72.32	79.01	85.52			
19	47.83	56.56	64.87	72.83	80.52	87.98	95.22			
20	52.96	62.63	71.83	80.65	89.16	97.42	105.44			
21	69.01	79.14	88.86	98.24	107.33	116.18				
22	75.69	86.81	97.47	107.76	117.73	127.43				
23	82.68	94.82	106.47	117.71	128.60	139.20				
24	89.98	103.19	115.87	128.10	139.95	151.48				

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees < 9 inches d.b.h. $Y = 0.02496 (D^2 H_4)^{0.75153}$

Trees ≥ 9 inches d.b.h. $Y = 0.00860 (D^2)^{0.99362} (H_4)^{0.75153}$

Table 46.--Predicted volume of stem wood to 7-inch d.o.b. top for southern pine in the Piedmont, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)									
	30	40	50	60	70	80	90	100	110	Cubic feet 3/
9	3.17	4.25	5.33	6.43	7.52	8.62	9.72			
10	4.78	6.42	8.06	9.71	11.36	13.02	14.68			
11	8.68	10.89	13.12	15.36	17.60	19.85	22.10			
12	11.01	13.83	16.66	19.50	22.35	25.20	28.06			
13	13.45	16.89	20.34	23.81	27.28	30.77	34.26	37.77		
14	15.99	20.08	24.19	28.32	32.45	36.60	40.75	44.91		
15	18.67	23.44	28.24	33.05	37.87	42.71	47.56	52.42		
16	21.48	26.97	32.49	38.03	43.58	49.15	54.73	60.32		
17	30.69	36.97	43.27	49.59	55.93	62.28	68.64			
18	34.61	41.69	48.79	55.92	63.06	70.22	77.40			
19	38.72	46.64	54.59	62.57	70.56	78.57	86.60			
20	43.04	51.85	60.68	69.55	78.43	87.34	96.26			
21	47.57	57.30	67.07	76.86	86.68	96.52	106.39			
22	52.31	63.01	73.75	84.52	95.32	106.14	116.99			
23	57.27	68.98	80.73	92.52	104.34	116.19	128.06			
24	62.43	75.20	88.02	100.87	113.76	126.68	139.62			

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees ≥ 9.0 inches d.b.h. $Y = 0.00195 (D^2)^{1.00449} (Th)^{1.02075}$

$$Y_R = e^{(-3.10643) (d)^{4.65458} (D)^{-4.95963}}$$

Table 48.--Predicted volume of stem wood to 4-inch d.o.b. top for southern pine in the Piedmont, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)									
	10	20	30	40	50	60	70	80	90	100
5	0.71	1.21	1.65	2.05						
6	1.41	2.38	3.24	4.04						
7	3.49	4.74	5.90	7.00	8.04					
8	4.54	6.18	7.69	9.11	10.47					
9	5.59	7.61	9.47	11.22	12.89	14.49	16.04			
10	6.95	9.46	11.77	13.95	16.02	18.02	19.94			
11	11.45	14.25	16.89	19.40	21.81	24.14	26.40			
12	13.60	16.93	20.05	23.04	25.90	28.67	31.36			
13	15.91	19.80	23.46	26.94	30.29	33.53	36.67	39.73		
14	18.37	22.86	27.09	31.12	34.99	38.73	42.36	45.89		
15	21.00	26.14	30.97	35.57	40.00	44.27	48.42	52.46		
16	23.79	29.61	35.08	40.30	45.31	50.16	54.86	59.43		
17	33.28	39.44	45.30	50.94	56.38	61.67	66.81			
18	37.16	44.03	50.58	56.87	62.95	68.85	74.59			
19	41.24	48.87	56.13	63.11	69.86	76.41	82.78			
20	45.52	53.94	61.96	69.66	77.11	84.33	91.37			
21	59.25	68.06	76.52	84.70	92.63	100.36				
22	64.79	74.43	83.68	92.63	101.31	109.76				
23	70.57	81.07	91.15	100.89	110.35	119.55				
24	76.59	87.98	98.92	109.50	119.75	129.74				

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees < 9 inches d.b.h. $Y = 0.02103 (D^2 H_4)^{0.76039}$

Trees ≥ 9 inches d.b.h. $Y = 0.00873 (D^2)^{0.96051} (H_4)^{0.76039}$

$$Y_R = e^{(-3.10643) (d)^{4.65458} (D)^{-4.95963}}$$

Table 49.--Predicted volume of stem wood to 7-inch d.o.b. top for southern pine in the Piedmont, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)									
	20	30	40	50	60	70	80	90	100	Cubic feet 3/
9	3.54	4.82	6.00	7.11	8.16	9.18	10.16			
10	5.30	7.21	8.98	10.64	12.22	13.74	15.21			
11		9.67	12.04	14.26	16.38	18.42	20.39	22.30		
12		12.19	15.17	17.97	20.64	23.21	25.69	28.10		
13		14.77	18.39	21.79	25.03	28.14	31.15	34.07	36.91	
14		17.46	21.73	25.74	29.57	33.25	36.80	40.25	43.61	
15		20.25	25.21	29.87	34.31	38.57	42.70	46.70	50.59	
16		23.17	28.84	34.17	39.25	44.14	48.85	53.43	57.89	
17		32.64	38.68	44.43	49.96	55.29	60.47	65.52		
18		36.62	43.39	49.84	56.04	62.03	67.85	73.50		
19		40.78	48.32	55.51	62.41	69.08	75.55	81.85		
20		45.13	53.47	61.42	69.06	76.44	83.60	90.58		
21			58.84	67.59	76.00	84.12	92.00	99.68		
22			64.44	74.02	83.23	92.13	100.76	109.16		
23			70.27	80.72	90.76	100.45	109.87	119.03		
24			76.32	87.67	98.58	109.11	119.33	129.29		

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees < 9 inches d.b.h. $Y = 0.02103 (D^2 H_4)^{0.76039}$

Trees ≥ 9 inches d.b.h. $Y = 0.00873 (D^2)^{0.96051} (H_4)^{0.76039}$

$Y_R = e^{(-3.10643) (d)^{4.65458}} (D)^{-4.95963}$

Table 51.--Predicted volume of stem wood to 4-inch d.o.b. top for southern pine in the Piedmont, based on d.b.h. and saw-log merchantable height 1/ 2/

D.b.h. class (inches)	Merchantable saw-log top (16-ft logs)									
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	Cubic feet 3/
9	7.02	8.58	10.44	12.38	14.36					
10	8.83	10.58	12.77	15.08	17.45					
11	12.75	15.29	18.00	20.79	23.61	26.44				
12	15.08	17.99	21.14	24.37	27.65	30.95				
13	17.57	20.88	24.48	28.19	31.96	35.76	39.56			
14	20.20	23.94	28.03	32.25	36.54	40.86	45.19			
15	22.99	27.18	31.78	36.54	41.38	46.25	51.15	56.05		
16	25.92	30.59	35.72	41.05	46.47	51.93	57.41	62.91		
17	29.00	34.17	39.87	45.79	51.81	57.89	63.99	70.11		
18	32.22	37.91	44.20	50.75	57.41	64.13	70.88	77.64		
19		41.82	48.73	55.92	63.25	70.64	78.07	85.51		
20		45.89	53.44	61.31	69.33	77.42	85.55	93.70		
21		50.12	58.34	66.92	75.65	84.48	93.34	102.22		
22		54.50	63.43	72.73	82.22	91.79	101.41	111.06		
23			68.69	78.75	89.01	99.37	109.78	120.21		
24			74.14	84.98	96.04	107.21	118.43	129.68		

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees ≥ 9 inches d.b.h. $Y = 0.00676 (D^2)^{0.88791} (Mh)^{0.94669}$

$$Y_R = e^{52.78714 (Mh)^{-1.58385} [(1.0-d^2/0.6084D^2)^2]^{0.61824}}$$

Table 50.--Predicted volume of total tree (wood only) for southern pine in the Piedmont, based on d.b.h. and saw-log merchantable height 1/ 2/

D.b.h. class (inches)	Merchantable saw-log top (16-ft logs)									
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	Cubic feet 3/
9	8.49	10.88	13.00	14.93	16.72					
10	10.23	13.12	15.68	18.00	20.16					
11		15.55	18.57	21.33	23.89	26.29	28.58			
12		18.15	21.68	24.90	27.88	30.69	33.36			
13		20.92	24.99	28.70	32.15	35.39	38.46	41.40		
14		23.87	28.51	32.75	36.68	40.37	43.88	47.23		
15		26.99	32.23	37.02	41.46	45.64	49.60	53.39	57.02	
16		30.27	36.15	41.52	46.50	51.19	55.64	59.88	63.95	
17		33.71	40.27	46.25	51.80	57.02	61.97	66.70	71.23	
18		37.32	44.58	51.19	57.34	63.12	68.60	73.83	78.85	
19		49.07	56.36	63.12	69.48	75.52	81.28	86.81		
20		53.76	61.74	69.15	76.12	82.73	89.04	95.10		
21		58.63	67.33	75.42	83.02	90.23	97.11	103.72		
22		63.69	73.14	81.92	90.18	98.01	105.48	112.66		
23		79.16	88.66	97.59	106.07	114.16	121.93			
24		85.38	95.63	105.26	114.41	123.13	131.51			

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees ≥ 9 inches d.b.h. $Y = 0.02895 (D^2)^{0.88901} (Mh)^{0.62875}$

Table 52.--Predicted volume of stem wood to saw-log top for southern pine in the Piedmont, based on d.b.h. and saw-log merchantable height 1/ 2/

D.b.h. class (inches)	Merchantable saw-log top (16-ft logs)									
	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	Cubic feet 3/
9	4.83	7.03	9.18	11.31	13.42					
10	5.83	8.47	11.07	13.64	16.18					
11		10.04	13.12	16.16	19.16	22.14	25.10			
12		11.71	15.31	18.86	22.37	25.84	29.30			
13		13.50	17.65	21.74	25.78	29.79	33.77	37.72		
14		15.40	20.13	24.79	29.41	33.98	38.52	43.03		
15		17.41	22.75	28.02	33.24	38.41	43.54	48.64	53.71	
16		19.53	25.52	31.43	37.28	43.08	48.83	54.55	60.23	
17		21.74	28.42	35.00	41.51	47.97	54.38	60.75	67.07	
18		24.07	31.45	38.74	45.95	53.10	60.19	67.24	74.24	
19		34.62	42.64	50.58	58.45	66.25	74.01	81.72		
20		37.92	46.71	55.40	64.02	72.57	81.07	89.51		
21		41.36	50.94	60.42	69.82	79.14	88.41	97.62		
22		44.92	55.32	65.62	75.83	85.96	96.02	106.02		
23		59.87	71.01	82.06	93.02	103.91	114.73			
24		64.57	76.59	88.50	100.32	112.06	123.74			

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ Trees ≥ 9 inches d.b.h. $Y = 0.00676 (D^2)^{0.88791} (Mh)^{0.94669}$

Table 53.--Predicted volume of total tree (wood only) for planted slash pine in the Coastal Plain, based on d.b.h. and total height $\frac{1}{2}$ /

D.b.h. class (inches)	Total-tree height (feet)							
	20	30	40	50	60	70	80	90
----- Cubic feet 3/ -----								
3	0.37	0.56	0.76	0.95	1.15			
4	0.67	1.02	1.37	1.72	2.07			
5		1.61	2.16	2.71	3.26	3.82		
6		2.33	3.13	3.93	4.74	5.55		
7		3.20	4.29	5.39	6.50	7.61	8.72	
8		4.20	5.64	7.09	8.54	10.00	11.46	
9		5.35	7.18	9.02	10.86	12.72	14.58	16.45
10		6.63	8.90	11.18	13.48	15.78	18.09	20.40
11			10.82	13.59	16.38	19.18	21.98	24.80
12			12.93	16.24	19.57	22.91	26.27	29.63
13			15.23	19.13	23.05	26.99	30.94	34.90
14			17.72	22.26	26.83	31.41	36.01	40.62

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.00184 (D^2 Th)^{1.02293}$

Table 55.--Predicted volume of stem wood to 4-inch d.o.b. top for planted slash pine in the Coastal Plain, based on d.b.h. and total height $\frac{1}{2}$ /

D.b.h. class (inches)	Total-tree height (feet)							
	30	40	50	60	70	80	90	
----- Cubic feet 3/ -----								
5	0.89	1.19	1.49	1.80	2.10			
6	1.69	2.26	2.83	3.40	3.98			
7	2.59	3.46	4.34	5.22	6.10	6.99		
8	3.59	4.80	6.02	7.24	8.46	9.68		
9	4.69	6.28	7.87	9.46	11.06	12.67	14.27	
10	5.90	7.90	9.91	11.92	13.93	15.95	17.97	
11		9.69	12.14	14.61	17.07	19.55	22.03	
12		11.63	14.58	17.54	20.50	23.47	26.44	
13		13.73	17.22	20.71	24.21	27.72	31.23	
14		16.01	20.07	24.14	28.22	32.31	36.40	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.00183 (D^2 Th)^{1.01315}$

$$Y_R = e^{(-0.52346 (d)^4.63924 (D)^{-4.00064})}$$

Table 54.--Predicted volume of stem wood to 2-inch d.o.b. top for planted slash pine in the Coastal Plain, based on d.b.h. and total height $\frac{1}{2}$ /

D.b.h. class (inches)	Total-tree height (feet)							
	20	30	40	50	60	70	80	90
----- Cubic feet 3/ -----								
3	0.30	0.45	0.61	0.76	0.91			
4	0.60	0.91	1.21	1.52	1.83			
5		1.47	1.96	2.46	2.96	3.46		
6		2.14	2.87	3.60	4.33	5.06		
7		2.94	3.94	4.94	5.94	6.95	7.95	
8		3.87	5.18	6.49	7.81	9.13	10.45	
9		4.92	6.58	8.25	9.92	11.60	13.28	14.97
10		6.09	8.15	10.22	12.29	14.37	16.46	18.54
11			9.89	12.40	14.92	17.44	19.97	22.50
12			11.80	14.80	17.80	20.81	23.83	26.85
13			13.89	17.41	20.94	24.48	28.03	31.58
14			16.14	20.23	24.34	28.45	32.57	36.70

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.00183 (D^2 Th)^{1.01315}$

$$Y_R = e^{(-0.52346 (d)^4.63924 (D)^{-4.00064})}$$

Table 56.--Predicted volume of stem wood to 6-inch d.o.b. top for planted slash pine in the Coastal Plain, based on d.b.h. and total height $\frac{1}{2}$ /

D.b.h. class (inches)	Total-tree height (feet)							
	30	40	50	60	70	80	90	
----- Cubic feet 3/ -----								
7	1.22	1.63	2.05	2.46	2.88	3.29		
8	2.31	3.09	3.87	4.66	5.44	6.23		
9	3.56	4.77	5.98	7.19	8.40	9.62	10.84	
10	4.93	6.60	8.27	9.95	11.63	13.32	15.00	
11	6.40	8.56	10.73	12.91	15.09	17.28	19.47	
12	7.96	10.66	13.36	16.07	18.79	21.51	24.24	
13	9.63	12.89	16.16	19.44	22.73	26.02	29.32	
14	11.41	15.27	19.15	23.03	26.92	30.82	34.73	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.00183 (D^2 Th)^{1.01315}$

$$Y_R = e^{(-0.52346 (d)^4.63924 (D)^{-4.00064})}$$

Table 57.--Predicted volume of total tree (wood only) for planted slash pine in the Coastal Plain, based on d.b.h. and height to 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)							
	10	20	30	40	50	60	70	80
----- Cubic feet 3/ -----								
5	1.39	2.40	3.31	4.16				
6	1.85	3.21	4.42	5.56				
7	4.10	5.65	7.10	8.47	9.79			
8	5.06	6.98	8.77	10.47	12.10			
9	6.10	8.42	10.57	12.62	14.58	16.48	18.32	
10	7.21	9.95	12.49	14.91	17.23	19.47	21.65	
11	11.57	14.53	17.35	20.04	22.65	25.18		
12	13.28	16.68	19.91	23.01	26.00	28.91		
13	15.08	18.94	22.61	26.13	29.52	32.82		
14	16.96	21.30	25.43	29.38	33.20	36.91		

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

$$3/ Y = 0.01740 (D^2 H_4)^{0.79293}$$

Table 59.--Predicted volume of stem wood to 4-inch d.o.b. top for planted slash pine in the Coastal Plain, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)							
	10	20	30	40	50	60	70	80
----- Cubic feet 3/ -----								
5	0.78	1.34	1.84	2.30				
6	1.35	2.33	3.20	4.01				
7	3.33	4.57	5.73	6.83	7.88			
8	4.34	5.96	7.47	8.90	10.27			
9	5.38	7.39	9.26	11.04	12.73	14.37	15.96	
10	6.45	8.87	11.12	13.24	15.28	17.25	19.15	
11	7.57	10.41	13.04	15.54	17.93	20.24	22.47	
12	8.74	12.01	15.05	17.93	20.69	23.35	25.93	
13	9.95	13.67	17.14	20.42	23.56	26.59	29.52	
14	11.21	15.41	19.31	23.00	26.54	29.95	33.26	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

$$3/ Y = 0.01713 (D^2 H_4)^{0.78464}$$

$$Y_R = e^{(-0.52346 (d)^{4.63924} (D)^{-4.00064})}$$

Table 58.--Predicted volume of stem wood to 2-inch d.o.b. top for planted slash pine in the Coastal Plain, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)							
	10	20	30	40	50	60	70	80
----- Cubic feet 3/ -----								
5	1.28	2.20	3.02	3.79				
6	1.72	2.96	4.07	5.10				
7	3.79	5.21	6.53	7.77	8.97			
8	4.68	6.44	8.07	9.61	11.09			
9	5.64	7.75	9.71	11.57	13.35	15.07	16.73	
10	6.66	9.15	11.47	13.66	15.76	17.79	19.76	
11	10.63	13.32	15.87	18.32	20.67	22.95		
12	12.19	15.28	18.20	21.00	23.70	26.32		
13	13.82	17.33	20.64	23.82	26.88	29.85		
14	15.53	19.46	23.19	26.76	30.20	33.53		

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

$$3/ Y = 0.01713 (D^2 H_4)^{0.78464}$$

$$Y_R = e^{(-0.52346 (d)^{4.63924} (D)^{-4.00064})}$$

Table 60.--Predicted volume of stem wood to 6-inch d.o.b. top for planted slash pine in the Coastal Plain, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)							
	20	30	40	50	60	70	80	
----- Cubic feet 3/ -----								
7	1.57	2.16	2.70	3.22	3.71			
8	2.79	3.84	4.81	5.73	6.61			
9	4.08	5.61	7.04	8.38	9.67	10.91	12.12	
10	5.39	7.41	9.28	11.06	12.76	14.40	15.99	
11	9.20	11.53	13.74	15.85	17.89	19.86		
12	11.01	13.80	16.44	18.96	21.40	23.77		
13	12.84	16.09	19.17	22.11	24.96	27.71		
14	14.70	18.42	21.95	25.32	28.58	31.73		

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

$$3/ Y = 0.01713 (D^2 H_4)^{0.78464}$$

$$Y_R = e^{(-0.52346 (d)^{4.63924} (D)^{-4.00064})}$$

Table 61.--Predicted volume of total tree (wood only) for planted loblolly pine in the Piedmont, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)							
	20	30	40	50	60	70	80	90
----- Cubic feet 3/ -----								
3	0.36	0.55	0.74	0.93				
4	0.65	0.99	1.34	1.68				
5		1.57	2.11	2.66	3.21	3.76		
6		2.29	3.08	3.87	4.67	5.48		
7			4.23	5.32	6.42	7.53	8.63	9.75
8			5.57	7.01	8.45	9.91	11.37	12.83
9			7.10	8.93	10.77	12.63	14.49	16.36
10			8.82	11.09	13.39	15.69	18.00	20.32
11				13.50	16.29	19.09	21.91	24.73
12				16.15	19.49	22.84	26.21	29.59
13				19.05	22.98	26.93	30.90	34.89
14				22.19	26.77	31.38	36.00	40.64

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.00172 (D^2 Th)^{1.02990}$

Table 63.--Predicted volume of stem wood to 4-inch d.o.b. top for planted loblolly pine in the Piedmont, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)							
	30	40	50	60	70	80	90	
----- Cubic feet 3/ -----								
5	0.74	0.99	1.24	1.50	1.76			
6	1.53	2.06	2.59	3.13	3.66			
7	2.44	3.28	4.12	4.97	5.82	6.68	7.54	
8	3.43	4.62	5.80	7.00	8.20	9.41	10.62	
9		6.09	7.66	9.23	10.82	12.41	14.00	
10		7.71	9.69	11.69	13.70	15.71	17.73	
11		9.48	11.92	14.38	16.85	19.33	21.81	
12		11.42	14.36	17.32	20.29	23.27	26.26	
13		13.52	17.00	20.50	24.02	27.55	31.10	
14		15.79	19.86	23.95	28.06	32.18	36.32	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.00159 (D^2 Th)^{1.02725}$

$$Y_R = e^{(-1.54900 (d)^{4.37037} (D)^{-4.29173})}$$

Table 62.--Predicted volume of stem wood to 2-inch d.o.b. top for planted loblolly pine in the Piedmont, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)							
	20	30	40	50	60	70	80	90
----- Cubic feet 3/ -----								
3	0.25	0.38	0.50	0.63				
4	0.55	0.83	1.12	1.40				
5		1.38	1.86	2.34	2.82	3.30		
6		2.05	2.75	3.46	4.17	4.89		
7			3.80	4.78	5.77	6.76	7.75	8.75
8			5.02	6.31	7.61	8.92	10.23	11.55
9			6.40	8.05	9.71	11.38	13.05	14.73
10			7.96	10.01	12.07	14.14	16.22	18.31
11				12.18	14.69	17.21	19.74	22.28
12				14.57	17.57	20.59	23.62	26.65
13					17.18	20.72	24.27	27.84
14					20.01	24.13	28.27	32.43
								36.60

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.00159 (D^2 Th)^{1.02725}$

$$Y_R = e^{(-1.54900 (d)^{4.37037} (D)^{-4.29173})}$$

Table 64.--Predicted volume of stem wood to 6-inch d.o.b. top for planted loblolly pine in the Piedmont, based on d.b.h. and total height 1/ 2/

D.b.h. class (inches)	Total-tree height (feet)							
	30	40	50	60	70	80	90	
----- Cubic feet 3/ -----								
7	1.14	1.53	1.92	2.32	2.71	3.11	3.51	
8	2.23	3.00	3.77	4.55	5.33	6.12	6.90	
9		4.70	5.91	7.12	8.34	9.57	10.80	
10			6.53	8.22	9.91	11.61	13.32	15.03
11			8.50	10.68	12.89	15.10	17.32	19.54
12			10.59	13.31	16.06	18.81	21.58	24.35
13			12.81	16.11	19.43	22.77	26.12	29.47
14			15.19	19.10	23.03	26.98	30.95	34.93

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.00159 (D^2 Th)^{1.02725}$

$$Y_R = e^{(-1.54900 (d)^{4.37037} (D)^{-4.29173})}$$

Table 67.--Predicted volume of stem wood to 4-inch d.o.b. top for planted loblolly pine in the Piedmont based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)							
	10	20	30	40	50	60	70	80
----- Cubic feet 3/ -----								
5	0.66	1.15	1.59	1.99	2.38			
6	1.27	2.20	3.04	3.82	4.56			
7	3.25	4.49	5.65	6.74	7.80	8.81		
8	4.30	5.94	7.47	8.93	10.32	11.67		
9	5.38	7.42	9.33	11.15	12.89	14.57	16.20	
10	6.48	8.95	11.25	13.44	15.54	17.57	19.54	
11		10.53	13.24	15.82	18.29	20.68	22.99	
12		12.18	15.32	18.30	21.15	23.91	26.59	
13		13.90	17.48	20.87	24.13	27.28	30.34	
14		15.69	19.72	23.56	27.24	30.79	34.24	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.01582 (D^2 H_4)^{0.79584}$

$$Y_R = e^{(-1.54900(d)^{4.37037}(D)^{-4.29417})}$$

Table 66.--Predicted volume of stem wood to 2-inch d.o.b. top for planted loblolly pine in the Piedmont based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)							
	10	20	30	40	50	60	70	80
----- Cubic feet 3/ -----								
5	1.24	2.15	2.97	3.74	4.47			
6	1.69	2.93	4.05	5.09	6.07			
7	3.77	5.21	6.55	7.82	9.04	10.22		
8	4.68	6.46	8.12	9.70	11.22	12.68		
9	5.65	7.81	9.82	11.72	13.55	15.32	17.04	
10	6.69	9.24	11.62	13.88	16.04	18.14	20.17	
11		10.76	13.53	16.16	18.68	21.12	23.49	
12		12.36	15.54	18.57	21.46	24.27	26.99	
13		14.05	17.66	21.09	24.39	27.57	30.66	
14		15.81	19.87	23.74	27.44	31.02	34.50	

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.01582 (D^2 H_4)^{0.79584}$

$$Y_R = e^{(-1.54900(d)^{4.37037}(D)^{-4.29417})}$$

Table 68.--Predicted volume of stem wood to 6-inch d.o.b. top for planted loblolly pine in the Piedmont, based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)							
	20	30	40	50	60	70	80	
----- Cubic feet 3/ -----								
7	1.52	2.10	2.64	3.15	3.64	4.12	4.58	
8	2.80	3.87	4.87	5.82	6.72	7.60	8.45	
9	4.15	5.73	7.21	8.61	9.95	11.25	12.51	
10	5.50	7.59	9.55	11.40	13.18	14.90	16.57	
11	9.45	11.88	14.18	16.40	18.54	20.62		
12	11.30	14.21	16.97	19.62	22.18	24.67		
13	13.18	16.57	19.79	22.88	25.87	28.77		
14	15.09	18.98	22.66	26.20	29.62	32.94		

1/ Blocked-in area indicates range of data.

2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.01582 (D^2 H_4)^{0.79584}$

$$Y_R = e^{(-1.54900(d)^{4.37037}(D)^{-4.29417})}$$

Table 65.--Predicted volume of total tree (wood only) for planted loblolly pine in the Piedmont based on d.b.h. and height to the 4-inch d.o.b. top 1/ 2/

D.b.h. class (inches)	Tree height to 4-inch d.o.b. (feet)							
	10	20	30	40	50	60	70	80
----- Cubic feet 3/ -----								
5	1.41	2.45	3.38	4.25	5.08			
6	1.89	3.27	4.52	5.69	6.79			
7	4.19	5.78	7.27	8.68	10.04	11.35		
8	5.18	7.15	8.99	10.74	12.42	14.04		
9	6.25	8.63	10.85	12.96	14.98	16.94	18.84	
10	7.39	10.20	12.83	15.32	17.72	20.03	22.28	
11	11.87	14.93	17.83	20.62	23.31	25.93		
12	13.64	17.15	20.48	23.68	26.78	29.78		
13	15.49	19.48	23.27	26.90	30.42	33.83		
14	17.43	21.92	26.18	30.27	34.23	38.07		

1/ Blocked-in area indicates range of data.

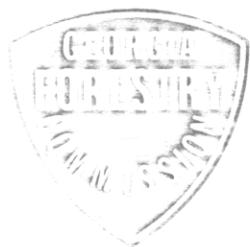
2/ Includes 0.5-foot stump allowance.

3/ $Y = 0.01738 (D^2 H_4)^{0.79624}$

Table 69.—Mean and range of tree measurements, by species and tree-size classes

Tree d.b.h. class size (inches)	Sample trees	D.b.h. Average : Range	Total Height Average : Range	Height to 4-in. d.o.b. top	Height to saw- log merch. top	D.o.b. at saw- log merch. top
Number	- - Inches	- - - - - Feet	- - - - -	- - - - -	- - - - -	- - - - -
NATURAL COASTAL PLAIN PINE (LOBLOLLY, SLASH, LONGLEAF)						
All trees	1285	12.0 1.1-24.0	69 8-102	- - -	- - -	- - -
≥ 5.0	1185	12.8 5.0-24.0	72 35-102	57 12-90	- - -	- - -
≥ 9.0	933	14.2 9.1-24.0	75 46-102	62 32-90	45 12-79	8.0 6.0-14.5
NATURAL PIEDMONT PINE (LOBLOLLY, SHORTLEAF)						
All trees	1026	11.6 1.1-20.4	66 12-107	- - -	- - -	- - -
≥ 5.0	926	12.6 5.1-20.4	60 32-107	55 13-95	- - -	- - -
≥ 9.0	720	14.0 9.1-20.4	74 49-107	61 39-95	45 12-81	7.9 5.8-11.8
PLANTED COASTAL PLAIN PINE (SLASH)						
All trees	196	7.1 2.5-14.4	54 23-79	- - -	- - -	- - -
≥ 5.0	111	8.0 5.0-14.4	58 32-79	39 14-67	- - -	- - -
PLANTED PIEMONTE PINE (LOBLOLLY)						
All trees	220	7.6 3.3-15.3	54 25-88	- -	- -	- -
≥ 5.0	139	8.9 5.0-15.3	61 37-88	42 10-70	- -	- -





John W. Mixon
Director

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